

REPORT

OF THE

CHIEF COMMISSIONER OF MINES

AND

PROVINCE OF NOVA SCOTIA

This volume is bound without issues for the
years 1865, 1866 and 1870
which ~~is~~^{are} are unavailable.



Digitized by the Internet Archive
in 2014

REPORT
OF THE
CHIEF COMMISSIONER OF MINES
FOR THE
PROVINCE OF NOVA SCOTIA,
FOR THE YEAR 1864.

SECOND EDITION.



HALIFAX, N. S.
PRINTED BY THE CITIZEN PUBLISHING COMPANY.
1873.

622609

N85

1864-1874

REMOTE STORAGE

REPORT.

Department of Mines,

Halifax, Dec. 12th, 1864.

SIR,—

I have the honor to submit, for the information of His Excellency the Lieutenant Governor, the following Report upon the affairs of the Department of Mines, for the Financial year ending the 30th of September last. In consequence of the resolution passed in the Legislature during its last session, changing the termination of the fiscal year from the 31st December to the 30th September, and of instructions in accordance with that resolution received by me from the Financial Secretary, this Report will only embrace a period of nine months.

I may here observe that the chapter of the Revised Statutes "Of Mines and Minerals," passed during the last Legislative Session, which amounts virtually to a new Act upon that subject, works harmoniously; and, so far as I can learn, gives general satisfaction. In carrying out its provisions, one does, indeed, meet with some small imperfections, from time to time; but, taking the law as a whole, it is operating very successfully.

I am happy to be able to furnish a report of the recent growth and present prosperity of the Mining interests of Nova Scotia, which, I cannot but think, will prove satisfactory as a review of the past; whilst it clearly indicates a large and prosperous extension of those interests during the future. Since I have had the honor to hold the office of Chief Commissioner of Mines, under the provisions of the chapter already referred to, I have, for greater convenience in furnishing information in detail, kept separate records of what relates to Gold Mines, and to mines other than gold, in a great measure dividing the business of the department into two sub-departments. I shall follow this classification in furnishing my statement of mining operations for the past year.

PART II.

GOLD MINES.

I am happy to say that the anticipations in which, in my Report for 1863, I ventured to indulge relative to the growing prosperity of our Gold Mines, are fully borne out by the facts which I have now to submit. Every month, Gold Mining is becoming less a series of spasmodic operations, and more a steady business into which men enter without any extraordinary excitement, and which they prosecute with the steady energy and the rational expectations they might be supposed to carry into any other business. The great advantage, too, of working the Mines on a more extended scale than formerly, has become pretty generally recognized. Formerly operations were, for the most part, carried on by individuals, or small associations, of very moderate means, occupying each but a small Mining tract, and usually limiting their works to a single shaft. Every auriferous quartz lode is found to vary in richness, both in a vertical and a horizontal direction. Nothing was more common than for the single-shaft miner to get discouraged when he reached a comparatively poor section of what was really a rich lode as a whole, and to abandon his mine altogether, at the same time imparting his discouragement to many others in his vicinity. Many quartz lodes have thus been condemned as too poor to be profitably worked, which would prove highly remunerative, if skillfully mined on a large scale; and it would appear that this fact is becoming every day more widely recognized among those engaged in mining enterprises.

In accordance with the plan followed in my last Annual Report, I will briefly sketch the operations in the several Gold Districts separately, since the beginning of the year, and their present prospects.

THE OVENS.

The state of affairs in this district continues to be as unsatisfactory as it was at the date of my last Report; although the present depression is owing to causes different

from those which produced such an unsatisfactory condition of things there during 1863. The greater part of the mining areas, originally taken up at the Ovens, were re-let during the latter part of 1863 and the earlier months of 1864; and, with the opening of the past spring, every disposition was shown by these new lessees to carry on vigorous mining operations. But there was an almost total cessation of work nearly as soon as it commenced. The explanation given is, that most of the lessees were associated with parties in the United States, from which country, mainly, they expected to draw the capital to invest in their mining works. The great rise in the price of gold in the United States, or rather the great depreciation in the value of the current money, and of nearly every description of stock in that country, brought these parties into such straits that they were compelled to suspend operations at the Ovens, which required a very considerable outlay before any fair return profit could be expected. It was expected that this suspension would be only temporary, and of brief duration, but works have not yet been commenced to any noteworthy extent. The return of Gold from this District, during the year, has been merely nominal.

RENFREW.

As during 1863, so in 1864, a profitable mining business has been carried on in this District, with no marked fluctuation. That business has, however, steadily increased. Here, as is indeed the case in most of the other Gold Districts, the total yield of Gold for the nine months of 1864 exceeds that for the twelve months of 1863. Renfrew presents a still more remarkable increase, this year, in the proportion of Gold obtained per man employed, a comparison which affords the surest test of the growing profitability of its mines. The total yield of Gold in that District, during the twelve months of 1863, at \$18.50 per ounce, was equivalent to \$203.90 per man employed. The total product for nine months of 1864, gives \$385 per man, or very considerably more than double the proportion of the previous year.

A road now in course of construction from Enfield railway station to Renfrew, by a nearly straight and almost level

route, will, when completed, be a great boon to parties interested in that mining district. The extension of this road into Rawdon, during the incoming year, would still further advance the prosperity of Renfrew, whilst it would be a great accommodation to a large number of people in the adjacent parts of Southern and Central Hants County.

OLDHAM.

Steady and satisfactory progress has also been made in this District, more quartz having been crushed, and more Gold produced during the nine months of 1864, than the twelve months of 1863. I must here observe, however, that the long period of excessive drought which prevailed during the past summer and early part of autumn, and which materially retarded the crushing of Quartz and cleaning of Gold, in nearly all the Districts, most notably affected the operations in Oldham. One small lot of Quartz crushed in this District, last Spring, gave the largest maximum yield of Gold that has yet been attained in Nova Scotia, being at the rate of no less than 103 ozs. 14 dwt. per ton of Quartz.

Great improvements have been made, during the summer, in the facilities of access to the Oldham Mines from Enfield Railway Station. They amount, in fact, to the making of a new road for nearly the whole distance from Shubenacadie river to the centre of the District. I would strongly recommend the continuation of this road quite across the District to the "New Guysborough Road," so called. I am assured that the distance, by a good and nearly level route, does not exceed four miles. The construction of this piece of road would greatly facilitate the further opening up of a prosperous Gold District. I will take the liberty to add, although the observation does not come properly within the scope of this Report, that it would conduce much to the welfare of the neighboring settlements, and therefore to the public interests in other respects. Were this road completed, it could not fail to become immediately the principal route for travel and traffic, between Halifax and the Gold Districts of Waverley and Oldham, on the one hand, and the farming settlements of Guysborough Road, Meagher's Grant, Little River and Lower Musquodoboit, on the other.

WAVERLEY.

The increase in profitable mining operations, in this District, during the just closed fiscal year, has, I believe, far exceeded the expectations of the most sanguine. Last year, (1863), the yield of Gold amounted to 2380 oz., 6 dwts., 3 grs.; for nine months of 1864, it is 4491 ozs., 3 dwts., 0 grs. Consequently, taking month by month, the yield for 1864 considerably more than doubles that of 1863. Taking the rate per man, we find that, making the same computation for twelve months as the sworn returns give for nine months of 1864, the Gold product shows an increase of very nearly fifty per cent. over that of 1863. In point of fact the Waverley returns for 1863 showed a yield per man, equal to \$258.40 for the whole year. For the nine months ending 30th September last, the product has been at the rate of \$297.80 per man. This is equal to \$372.25 per man for the twelve months. I believe that, in reality, it will be found to considerably exceed that. I must qualify the above statements with the remark that, in Waverley as in most other Districts, much of the labor returned as employed in mining and crushing, has in fact been employed in erecting quartz mills and machinery, houses and other buildings, making roads, and other works only indirectly connected with mining. I may add further that the average yield of Gold per ton of quartz in Waverley is 12 dwts. 17 grs. This is the smallest average shown by any Gold Mining District in Nova Scotia. Yet Waverley gives at the rate of not less than \$372.25 per annum to every man *in any way engaged* in and about the mining of this Gold and preparing it for market. I may not unreasonably ask, what other industrial occupation in Nova Scotia, or in North America, shows so fair a return for the actual labor employed?

In this District likewise a new piece of road has been made, which extends from the Eastern post road, through the heart of the mining lands, to the railway station at Windsor junction. The extension of this road in a westerly direction towards the latter point happens to have been almost simultaneous with the opening of new and extensive mines in the same direction. The completion of this road will prove a great accommodation to the public generally, as well as to Gold miners, in that vicinity.

MONTAGU.

During the early part of the past season, mining operations in this district were in part suspended. This was owing to the state of the money market in the United States, the greater portion of the mining property in Montagu being held by parties in that country. Latterly, operations, both in the way of mining and erecting machinery, have been resumed with vigor. On reference to tables in the Appendix, it will be seen that, in 1864 as in 1863, Montagu, with the exception of one other District, produced the largest yield of Gold to the ton of quartz. It still continues to be a characteristic of the quartz of this District that its maximum and minimum yield vary but little from the yearly average, thus showing a very even distribution of Gold.

The facilities for carrying on operations at Montagu have, since the date of my last Report, been greatly increased by the construction of a road from the Preston road near the head of Lake Loon, quite through the heart of the District, to the Truro road near Lake Charles.

TANGIER.

This District, too, suffered much in the early part of the season from the same causes which, during the same period, retarded the progress of The Ovens and Montagu. Here too vigorous mining operations have latterly been resumed. Nearly all of the small, thousand-square-feet claims, the original leasing of which in this District have, as mentioned in my last Report, so much impeded effective mining operations there, have at length been got rid of, through forfeiture, or by purchase, or amalgamation of the interests of lessees; and I cannot but think that the mining prospects of Tangier are better now than they ever were before.

The road which, in my last Report, I recommended to be made from the head of Pope's Harbor to Old Tangier, has been partially constructed. Enough has been done upon it to provide a fair Winter road; but a considerable further outlay will be necessary to complete and put it in a condition for Summer travelling. If, as is rumored, it is intended to extend this road through to Musquodoboit, I would respectfully call attention to the

desirability of its being done as soon as possible. To say nothing of the large tract of land which such a road would open up for settlement by agriculturists, recent discoveries to which I shall again allude indicate that a great proportion of the whole tract lying between Old Tangier and Musquodocit is highly auriferous, and the making of this road is indispensable to mining operations being there carried on with profit, or indeed at all.

SHERBROOKE.

This District continues to maintain its high character as a rich Gold-producing tract. During the nine months, operations have been carried on with varying success; but the result for the whole three quarters is highly satisfactory. In its gross product, this District ranks a the third in the Province for the period to which this Report refers; whilst the amount of Gold per man employed about the mines, for the three quarters of the year ending with September, is equal to \$427.51, Sherbrooke being in this respect the second District in the Province.

WINE HARBOR.

The results of mining operations in this District, too, since the date of my last Report have been highly satisfactory. During the nine months, Wine Harbor shows a larger gross product of Gold than any other District except Waverley. In the amount of Gold per man employed, it far exceeds every other. For the nine months it is equal, at \$18.50 per ounce, to no less than \$749.73 per man. This is equal to \$937.16 per annum, for every man employed in and about the Wine Harbor Gold mines!

STORMONT.

The Mines at Isaac's Harbor, which is the only section of this District where any notable mining operations are being carried on, are in a prosperous condition. The tabular statements in the Appendix do not show that a large quantity of quartz has been crushed: they do not show a large yield of Gold per man; but they do show for Isaac's Harbor the largest yield of Gold per ton of quartz of any District in the Province. In fact there was little

crushing of quartz done in this District during the nine months ; but the quantity mined was much more considerable, and I have reason to believe that this quartz was of a rich quality, and will contribute largely toward the product of Gold shown by this District for the incoming year.

WAGAMATKOOK.

The result of operations in this place has not come up to the expectations which were entertained of the District at the time it was proclaimed as such. As to the richness of this part of the country in Gold, I have, as yet, no sufficient *data* to form a positive opinion. Little work has yet been done there during the past season, either in mining, or washing for Gold. This, I have every reason to believe, has been owing to the inaccessibility of the spots where the auriferous deposits are believed to exist. They are in a rugged, wooded tract of country, far removed, for the most part, from any public road. I would urgently recommend that operations be commenced early in the coming Spring, to make a road quite through this District, connecting with the highways already existing in this vicinity.

DISCOVERIES.

Applications for mining areas have been frequently made during the year by parties claiming to be the discoverers of new auriferous deposits. The most noteworthy of these discoveries, and the only one which I shall particularly mention, was made about the close of the fiscal year, and on land a few miles to the southward of the Upper Musquodoboit Settlement. From the accounts given me by the discoverer and others who have visited the locality, and from specimens obtained there which I have seen, I am inclined to think that this discovery will prove to be a highly important one. The auriferous tract appears to be of great extent. A large number of mining areas have already been taken up. Nevertheless mining operations will be quite impracticable unless a road is made to the spot. The projected road from Tangier to Musquodoboit, already mentioned, could be carried through the tract to which I am now referring; and this Gold discovery furnishes another reason in favor of its early construction.

GENERAL RESULTS.

The economical results of the nine months' mining operations are not only highly satisfactory, but they show a marked improvement upon those of 1863, which, again, was a great improvement upon 1862. Thus our Gold mines show a steadily increasing prosperity.

In accordance with the practice adopted by me in 1863, I have, at the close of each quarter, prepared monthly tabular statements which have been published in the *Royal Gazette*, showing the details of mining operations in each District. These will be found in the Appendix (marked A.) A summary of these statements for the whole nine months has also been made up (Appendix B.) On reference to the latter, and to the comparative statement (Appendix C.) it will be seen that there is a slight falling off in the number of men engaged in Gold mining, taking the Province as a whole, the numbers being 877 for 1863, and 830 for 1864. The causes of this will, I think, be sufficiently understood from what I have already said in speaking of the several Districts separately. In every other respect, 1864 shows a marked improvement upon the previous year. The average yield of Gold per ton of quartz is 19 dwts., against 16 dwts. 12 gr. for 1863. The whole twelve months of 1863 produced 14001 oz. 14 dwts. 17 gr. Nine months of 1864 show a return of 14565 oz. 9 dwts. 8 gr. I estimate that the product of the whole twelve months of the present year will have amounted to 20000 oz.* The total value of last year's product at \$18.50 per ounce, amounts to \$259,032.35; that of the yield for three-quarters of 1864, to \$260,461.50. This latter sum is equivalent to \$324.66 for nine months, or \$405.82 for the whole twelve months, for every man employed in the mines, although in some Districts a considerable portion of their time was spent in the erection of buildings and machinery, making roads, and other works preparatory to mining. This is at the rate of \$1.39 per day per man. In 1863, the average daily earnings per man was \$0.95; and that sum, I took occasion to observe in my last report, was a higher average than had yet been attained in quartz mining in any other country.

* Since the above was sent to press, full returns for the last quarter have been received, showing the total yield for the twelve months to be 20022 oz. 18 dwts. 13.

In calculating the currency value of Gold mined, I have counted it at the rate of \$18.50 per ounce, that being the sum at which I am compelled by law to rate it in receiving cash payments for royalty. But in fact its market value is higher than this. The price of smelted Gold in Halifax, at the commencement of the present year, was \$19.75 per ounce; at present, it is \$19.85; I assume the average for the year to be \$19.80. But an assayer in Halifax, through whose hands a large portion of our Gold passes, finds that the average loss on gold, during the year, in the smelting process was $2\frac{1}{4}$ per cent. Assuming that all of the above-named quantity was unsmelted, although, in fact, a small portion of it was smelted, we arrive at the following result:—

	14565 oz. 9 dwt. 8 gr.		
Less $2\frac{1}{4}$ per cent., loss.....	327	14	8
	<hr/>		
	14237	15	0

At \$19.80 per oz., equal to \$281,907.50.

I am not prepared to offer even a conjecture as to the quantity, if any, of Gold mined which does not appear at all, in the sworn returns made to me. It is rumored that, in some Districts, dishonest men have been in the habit of coming about the mines and surreptitiously buying from employees Gold of which they had, of course, defrauded their employers. I do not know how far these rumors are well founded, but I have heard among lessees more complaints upon the subject within the year just closing than I ever did before. If such dishonest practices are indulged in, I know of no cure but that to be provided by greater vigilance on the part of the managers of mines, and the making a signal example of any culprit who should be detected in thus purchasing stolen property.

The statements of receipts and expenditures on account of the Gold Fields (Appendix C. and E.) exhibit a still more gratifying condition of affairs. Last year, it may be remembered, the actual outlays of the Department exceeded the receipts by a sum amounting to \$4608.09. This year, after charging, because of the difficulty of analyzing some accounts, *wholly* to Gold Mines, certain items of expense—such as Salaries, Advertising, and Printing, Stationery, and Office Expenses—which are really chargeable to the Department generally, the receipts

for the three quarters ending September 30th exceed the Expenditures by \$13917.94. But in my last report it was admitted that a large portion of the payments actually made in 1863 were made to meet liabilities incurred in previous years; and that, on the transactions of that year considered alone, there was a balance on the other side of the account of \$7938.34. I may, then, as well apply the same scale to the transactions of 1864. As will be seen by the Comparative Statement (Appendix F) there was paid, during the nine months of 1864, \$5400 on account of liabilities of previous years. Consequently the whole balance in favor of the Gold Fields for the three quarters of the year, even upon the unfavorable basis represented in the Appendix, amounts to \$19317.94. This, for the whole twelve months, is equivalent to \$24,142.42 to the credit of the Gold Fields for 1864, against \$7938.34 for 1863, or an increase of over 300 per cent. to account of profit. I cannot but think that, a year since, so gratifying a result could scarcely have been anticipated by the most sanguine.

PART II.

OF MINES OTHER THAN GOLD.

The excitement and activity exhibited during the past year in working, preparing to work, and searching for, Mines other than Gold, have been even greater than in the case of Gold Mines. I find that during 1863 there were one hundred and fifty-three applications for Mining Licenses. The increased and increasing interest taken in mining enterprise is shown by the fact that during the three quarters ending September 30th, 1864, there were made and paid for no less than two hundred and forty-seven applications for Licenses to Search, and thirteen for Licenses to work—or two hundred and sixty in all. As these licenses to search very rarely cover an area of less extent than five square miles, it thus appears that within the same period, applications have been received, covering in the aggregate a tract of no less than one thousand two hundred and twenty-five square miles. The greater

number of these were taken with a view to searching for Coal; but several were for Copper, Lead, and other minerals.

On reference to the comparative statement (Appendix G), it will be seen that the year's operations show a considerable increase over 1863 in the quantity of Coal mined; and this, too, notwithstanding the fact that there was a large falling off in the product of the General Mining Association's Mines at Sydney, owing to a "strike," last Spring, among the operatives of that place. Estimating the product of the last three months of the year to be in proportion to that of the first nine months—and it will, in fact, be greater—1864 will have shown an increase of about twenty-four per cent over 1863, in the produce of our Coal Mines. I can safely venture to predict that the operations of 1865 will show a much larger proportionate increase.

I regret that, owing to the fact of no Inspector of Mines having yet been appointed, and my own inability, owing to the urgent demands of other duties, to make myself thoroughly familiarized with the works of all the Collieries in Nova Scotia during the few months that have elapsed since they were placed under the Department of which I have the honor to be the head, I am unable to give as full and detailed a report as I could wish of operations in the several Coal Mines, especially of works below ground. I shall, however, with such materials as I have been able to become possessed of, through a hasty personal inspection, or otherwise, give a brief sketch of operations in the several mines being worked in the Province.

CAPE BRETON COUNTY.

The most Southern mine opened in this County is the *Mira Bay Mines*, of Messrs. McLeod and Tracy. They are on the Northern shore of the bay of the same name, about False Bay beach. No coal had yet been shipped from this place on the 30th September last, although some has been since. The operations down to that date had been of a preparatory nature. A seam of excellent Coal had, however, been opened, of from 4 ft 6 in. to 4 ft 9 in. in thickness. There were then 23 men and 3 horses employed on the premises, with the prospect of a brisk business being done during the incoming year.

The *Caledonia Mines*, in the possession of Wilson and others, are situate on the extreme point of the promontory which separates Cow Bay from Mira Bay. The works here were commenced only in May last, since which time fair progress seems to have been made in opening the Mine. A wharf has been constructed, extending 120 feet in Cow Bay, and several buildings have been erected. According to the Returns, the average number of men employed is 15 ; boys, 4 ; horses, 2.

The *Gowrie Mines*, under lease to the Messrs. Archibald, on the north side of Cow Bay, show a large increase in the product of Coal compared with that of 1863. Much progress has been made by the lessees in extending their works. I find that, during the nine months ending Sept. 30th, \$13,200 have been expended upon the Wharf and Breakwater ; \$8750 in the construction of Dwelling Houses and other Buildings ; \$5000 in Machinery ; \$500 in sinking a new Pit, 85 feet in depth ; and \$6000 in the constructing a Railroad between the new shaft and the shipping place—making in all, an expenditure of \$33,450 during the three-quarters of the year.

At the *Block House Mines*, Cow Bay, the operations for 1864 have been characterized by a marked degree of activity. On reference to the Comparative Statement in the Appendix, it will be seen that if, during the last quarter of the year, Coal continued to be raised and shipped at the same rate as during the three previous quarters—as I have no doubt will prove to have been the case—the product for the whole year will nearly quadruple that of 1863. During the three quarters to which this Report refers, there were employed about this Colliery 557 men and boys, and 40 horses. There are also in the work one steam engine of 15 inch cylinder, and 4 feet stroke ; one, 16 inch cylinder, 3 feet stroke ; one of 5 inch cylinder ; and 3 of Woodward's steam pumps, of 9 inch cylinder each. Two shafts, and one slope leading directly from the main headways to the wharf, are in use for extracting the Coal from the mine. During the nine months, the wharf has been further extended, and is now 600 feet in length, and 75 in width, affording at and near its termination a depth of 24 feet of water at high tide ; whilst to moor vessels in the Bay, three mushroom anchors have been provided, of 10,000 lbs. weight each (Admiralty test). During the same period, no less than 60

buildings, comprising Superintendent's dwelling, engine house, warehouses, shops, and miners' houses, have been erected, all of which, I must say, are models of their kind, being spacious, airy, and commodious. About the termination of the period to which this Report refers, Coals were being raised from this mine at the rate of from 400 to 450 tons per day.

At *Schooner Pond*, under Lease to Messrs. Ross, Kaye, and Symonds, a moderate, but thriving, business seem to have been done within the past season. During the three quarters, there were kept employed, on the average, 55 men and boys, and 5 horses. There were also expended, during that time, \$2400 in the erection of new buildings. In other new works, \$1000 in boring, sinking, making, and repairing railways and cars; and \$2000 in the construction of wharves.

The *Clyde Mines*, at Big Glace Bay, under lease to Messrs. A. & J. Campbell, have been making fair progress in development during the past year, although operations there are still only in their infancy. The Comparative Statement in the Appendix shows that the product during the three quarters of 1864 is about eight times as great as that during the whole of 1863. During the former period I find, by the Managers' Returns, that there have been employed on an average 40 men and boys and two horses. It further is shown that there has been expended on improvements in that time, on buildings \$800; drains, headways, levels, and new openings, \$650; purchase of building materials \$1500; engines and machinery, \$10,000; and on wharf materials, \$600,—making in all an expenditure of \$13,550.

From what is known as the "Converse" area, on the North shore of the Great Glace Bay Lake, now under License to Work to Converse and others, no Coal appears to have been yet shipped. The occupants appear, however, to be making energetic efforts to open up their property in a scientific and workmanlike manner; and to commence, at the earliest possible moment, to raise and ship Coal in quantity. According to the returns, there had been expended, up to the 30th Sept., on levels and drains, \$400; geological and general surveys, \$6000; engineering plants and sundries, \$1000; in all, \$7400. This Company purpose mining upon

what is known at the Phelan vein, which, where it has been opened, shows a thickness of eight feet of Coal.

The *Little Glace Bay Mines*, under lease to, and worked by the Glace Bay Mining Company, have exhibited great activity during the past season. As a producer, these works have ranked next to the Sydney Mines, in their quantity of coal, if, indeed, they have not exceeded them on the whole twelve months' operations. A large outlay has been incurred here in the construction of an artificial harbor, or dock, which is still further extended. The two piers forming the entrance to this are each 450 feet long, or 900 feet in all, supported, and in fact, mainly composed of, firmly driven piles. The harbor has been excavated in a space where there seems to have been a fissure in the rock, of an average width of 200 feet. Through this a small rivulet trickled, and the space where the harbor now is, was, for the most part, dry at low water in the bay outside. The harbor and its entrance channel have been excavated to a depth of 17 feet below that low water level; and in doing this, over 100,000 cubic yards of earth have been removed. When the excavations are completed, it is hoped that this harbor will afford sufficient accommodations for vessels coming for coal; but at present, many are obliged to repair to Sydney, there to await their turn. It now affords a wharf frontage of 580 feet, with 3 drop landings, and 2 schutes. The approximate cost of the harbor, with that of the apparatus and materials on hand for its extension, is put down at \$80,000.

The returns, as furnished, do not particularize the exact portion of the works of this Colliery which have been constructed during 1864. Among the above ground works, however, constructed some time previous to Sept. 30th, besides the harbor, piers, and wharf already referred to, were a railway three-quarters of a mile in length. Another piece of railway is in course of construction to connect with new works. The buildings erected by the Company upon their grounds number 48. Of these, 29 are dwelling houses, comprising 65 tenements. The remainder are stores, offices, shops, engine houses, &c., &c., and, I must add, a school house. The average number of men employed during the three quarters, was 282.

This Company have become assignees, and have applied for a Lease of an area adjoining their other property, which was formerly under a License to Work to W. F. Parrott. Effective mining operations have been commenced upon it; and the new piece of railway already referred to is to connect with pits upon that area.

The International Coal Company's Mines comprise what were originally four distinct mining areas, of about one square mile each. These are the two areas originally leased to Messrs. Caddigan and McLeod, near Deadman's Cove, and which were conjointly mentioned in last year's Report as the "Union Mines," and two other areas, originally taken by Messrs. McLeod, which are still under Licenses to Work. Consequently, the mining property of this Company now extends from the General Mining Association's tract to the shore of the Big Glace Bay Lake.

Raising and shipping Coal have been carried on with considerable activity during the past season; but the attention and energies of the Company's Agent and employees seem to have been principally directed to preparatory operations—to carefully devising and maturing such plans, and constructing such works, as will enable them, upon so extensive a tract, and during the *whole* term of their lease, to mine and convey to market the greatest possible quantity of Coal at the least possible expense. Of the steps taken by this Company towards Railway construction, I shall speak hereafter. As for other works, besides the mining that has been carried on upon the original "Union Mine" areas, a pit has been sunk upon each of the McLeod areas upon a vein showing $8\frac{1}{2}$ feet thickness of pure Coal; and portions of the Coal have been shipped. Several blocks of miners' houses, of a superior class, whether as regards appearance, spaciousness, or convenience, have been erected. A large quantity of material has been collected for the erection of others, as well as engine-houses, warehouses, shops, sheds, and other buildings; also machinery, castings, and other materials required for the extension of works. This Company took formal possession of this property in June last, and the amount returned as expended up to the 30th. of September, is, without going into details, \$14,310.

The Boston and Bridgeport Coal Company, holding a

License to Work on the South side of Bridgeport Basin, report having discovered good, workable seams of Coal, but had raised none up to the 30th September. They have been making explorations and surveys, with a view to active mining operations at an early day. The formal returns show that in these preparatory operations, the sum of \$7,899.68 has been expended during the three quarters.

On "*The General Mining Association's*" tract at *Lingan*, no new works have been erected, except one dwelling house. The returns show that 165 men and boys, and 25 horses, were employed at this place.

In the *Sydney Mines* of the same Association, there were employed, during the past year, an average number of 500 men and boys, and 103 horses. Few additions have been made during the year to the buildings or machinery. A horizontal, two cylinder steam engine has been erected, for drawing coal wagons up an inclined plane 500 yards in length, from what is known as "the Lloyd's" to the "Queen Pit." A 10 cwt. steam-hammer has been imported, and is in process of being mounted for operation. A new engine chimney, 63 feet in height, has also been erected for the purpose of giving additional draft to the boiler fires for the underground engine.

Nothing has been done during the past year in the way of raising or shipping Coal, or advancing works at the *Point Aconi* tract of the "General Mining Association."

Between Sydney Bar and Little Bras d'Or is the area under License to Work to *Roach & McInnis*. Some Coal has been raised here from near the outcrop of what appears to be a promising Coal vein, but no buildings or machinery worth mentioning have as yet been placed upon the ground.

What is known as the *Collins' Mine*, on the south side of Little Bras d'Or, was formerly held in part by P. Collins, and partly by Gauthro and Luffin, under lease. The whole property has recently been disposed of to Mr. Geo. L. Dix and others of Boston; and the purchasers have also obtained Licenses of several other tracts in the vicinity. Great preparations are being made by the new proprietors to enlarge their works and extend their operations during the coming season.

The Coal Mine of *C. J. Campbell*, on the Little Bras d'Or, was not worked during the period from the 1st January to 30th September. Since the latter date, it has passed into other hands, and operations have been recommenced.

During the past year the proprietors of the *Block House Mine*, of Cow Bay, and the *International Company*, have both been engaged in making surveys for railway lines to connect their respective Collieries with good shipping places. The lines projected, will, when completed, form a continuous railway communication between the two fine harbors of Sydney and Louisburg. All of the numerous mines situated between these points, although immediately upon, or near, the coast, are subject to the serious disadvantage of having no good natural harbor nearer than one, or the other, of the two just named. Consequently great loss of property has already occurred from the necessity of shipping Coal in exposed situations. The projected railway works will give a great impetus to mining operations, and materially enhance the value of the Collieries in this County. It is gratifying to learn, as I have learned, that there is a probability of the two Companies already named, with perhaps others equally interested, combining their efforts to carry on conjointly, and with all possible speed, these highly desirable Railway works.

VICTORIA COUNTY.

The *New Campbelltown Mine*, at Great Bras d'Or, under Lease to C. J. Campbell, has been worked continuously throughout the past year; and much work has also been done preparatory to a future enlargement of operations. According to returns furnished, an average number of 120 men and boys, and 18 horses, have been employed within the three quarters. Within the same period, an outlay of \$10,440 has been made upon this property. Of this, \$2040 was expended in mining; \$1600 in steam engine, pumps, and machinery; \$3200 in railway, tramways, and rolling stock; \$400 in extending wharf; and \$3200 in buildings and other works.

RICHMOND COUNTY.

The return furnished me of the *Sea Coal Bay Mine* represents that no new works have been constructed there during the year. The average number of men employed was 14.

At the *Richmond Mine*, Little River, the average number of men employed was 34; horses, 3. The returns show an expenditure at this mine, for the three quarters, of \$11,981. Of this sum, \$1200 have been spent upon a new shaft, one hundre dfeet in depth; \$1063 upon two underground levels of three hundred feet each in length; whilst \$9718 have been expended in erecting dwellings, ballasting railroad, and for pumping machinery.

PICTOU COUNTY.

The only mine in this County from which I have any return is that of the *Albion Mines*, of the "General Mining Association." In this long-established Colliery such ample provision had previously been made for extended mining operations, that few new works have been added during the fiscal year ending Sept. 30th. According to returns, however, a sum of \$1957 have been expended during that time, in workmen's cottages and other buildings.

CUMBERLAND COUNTY.

The extent of operations at *The Joggins*, under lease to the "eneral Mining Association," is, for the most part, shown by the tables in the Appendix. Some new works have, however, been constructed. The Breakwater at the Upper Mine has been extended fifty feet further out into the Bay. In the mine the entire level—about two hundred yards in length—has been excavated high enough to permit the working of horses therein, which has not been the case heretofore. The average number of men and boys employed in this mine during the year has been 48; of horses, 10.

At the *Victoria Mine*, near Piver Hebert, since January last, the working shaft has been sunk 50 feet deeper; three air shafts have been made; levels to the extent of 640 feet have been driven; a wharf has been built; and the previously constructed piece of railway has been extended to the wharf, the distance being in all 2,500 feet. Six miners' dwellings, comprising twelve tenements, have also been erected during the current year.

At the mine of the *Lawrence Company*, which is also upon River Hebert, the average number of men employed during the three quarters has been 48. Levels to the extent of 600 yards have been driven; also a slope and air shaft of 40 feet, and a level for drain 300 feet in length.

A large amount of labor has been done at the *Macan Mine*, with a view to more extensive operations. The statement of the Superintendent shows that \$12,749 have been expended on works there within the fiscal year. Among these works were a railway $1\frac{3}{4}$ miles long, a wharf and breakwater, five houses comprising eight tenements, and other buildings. The average number of hands employed was 42. The Company have procured a 16-horse power engine for the purpose of raising coal, but on the 30th September it had not yet got into operation.

The *Chignecto Mine*, like that last named, is near the Macan River, in the lower part of its course. No coal was raised during the three quarters ending September 30th; but the Superintendent makes a return of \$6,103.33 expended in sinking a shaft, tunnelling, erecting buildings, and other preliminary works. A railway, $3\frac{1}{4}$ miles in length, is in course of construction, to connect the working shaft with a shipping place.

COPPER MINES.

The *Cheticamp Copper Mining and Smelting Company* have had, during the year, an average number of 12 men employed in opening up the property under lease to them at Cheticamp, in Inverness County. No ore has yet been extracted, the works being as yet of a preliminary character. According to the sworn statement of men employed upon

them, a shaft has been sunk to a depth of 106 feet. This connects with an adit level, which is to be 410 feet in length, 379 feet of which distance is completed. An air shaft, 30 feet in height, has also been cut from the adit level to the surface of the ground.

The mine of the *Annapolis Copper Company*, is situate near Margaretville, Wilmot, in the County of Annapolis. It is now worked by a Company from the Northern States, of which Mr. George L. Dix is President and Manager. During the past year \$2,500 have been expended in sinking a pit, erecting pumps, derricks, &c. The works at this place are not sufficiently advanced to enable me to express any opinion as to the prospects of the mine; but the licensees appear to be sanguine as to the eventual success of their enterprise.

FUTURE PROSPECTS.

The foregoing pages show what has been done in the way of actual mining during the past year. But during that period, great additional labor has been performed and additional expenditure incurred in making searches for mines, and in preparations for working them. These explorations have, generally speaking, been highly successful. The tables in the Appendix show the extent to which mining areas have been taken up in the several Counties; and the labor and money expended in exploration in the respective Counties have been in about the same proportion as the extent of area applied for in them. A large amount of foreign capital is being induced into the Province to be expended in the development of these mines. Owing to this fact, to the keen and widely extended activity with which explorations have been, and are still being carried on, and to the great success which has attended them, I confidently predict that the incoming year will exhibit a greatly increased activity in this department of Nova Scotian industry, and a corresponding increase both of the products of our mines and of the revenue which they will yield to the Provincial Treasury.

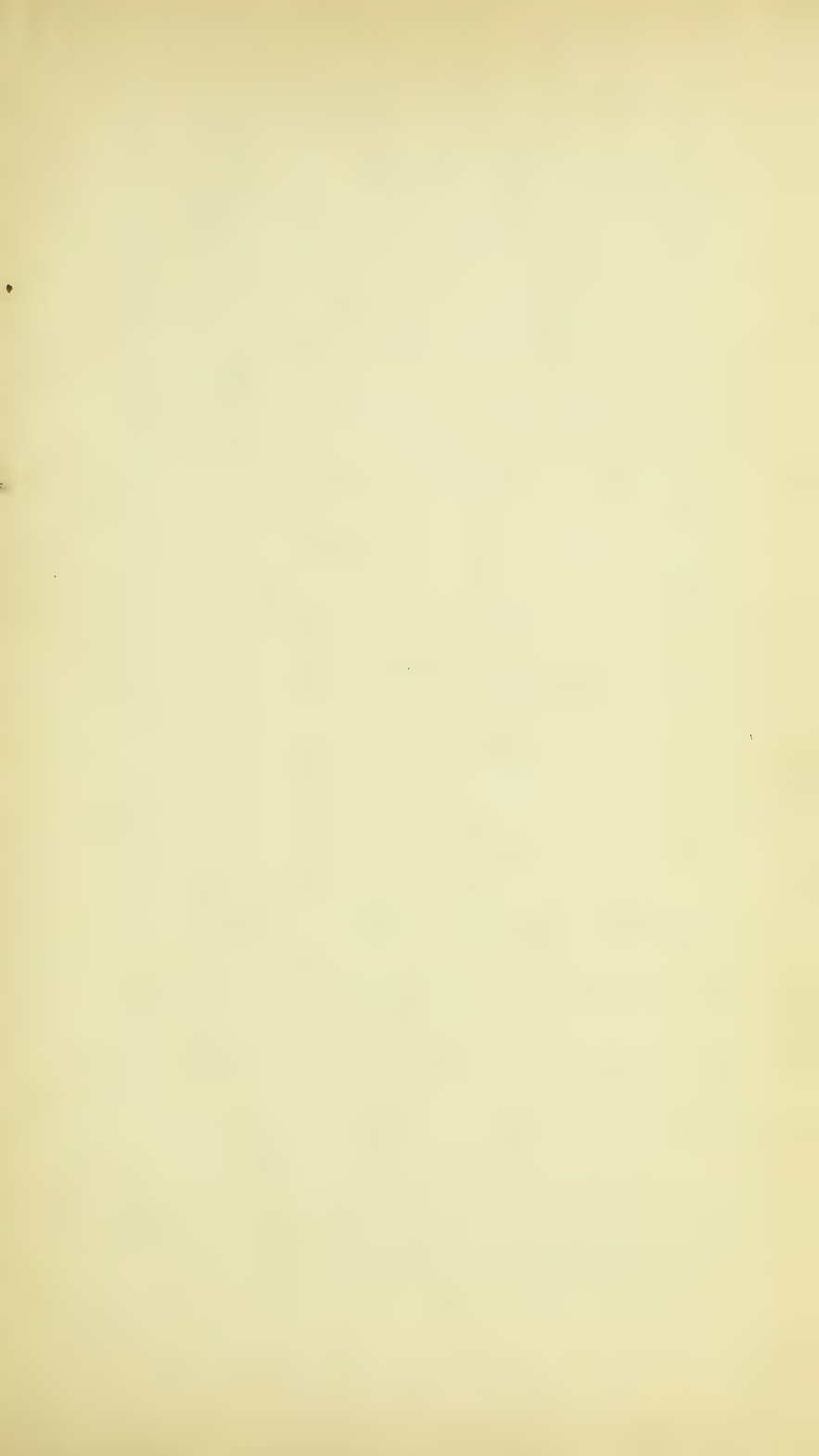
I have the honor to be,

Your obedient servant,

P. S. HAMILTON,

Chief Commissioner.

To the Honble. the PROVINCIAL SECRETARY.



APPENDIX A.

Table shewing the number of Gold Mines being worked, the number of Men engaged in Mining, the quantities of Quartz raised and crushed, and the average yield per ton, and the total yield of Gold, &c., in various Gold Districts, for the twelve months ending December 31st, 1864, as per Statistical Returns of the Deputy Commissioners.

JANUARY.

Districts.	Number of Mines worked.	Average number of men daily employed in Mining.	Total number of Quartz Mills in District.	Do Steam Power.	Do Water Power.	Quartz Raised.		Quartz Crushed.		Yield per Ton		Maximum yield per ton.		Gold obtained otherwise than from Quartz Mines.		Total yield of Gold.	
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont,	9	71	1	1	1	70	...	...	...	...	...	...	...	...	...	...	...
" Isaac's Harbor "	39	4	3	1	...	131	...	...	131	...	...	1	...	...	...	189	5
Wine Harbor.	6	39	4	3	1	111	...	...	111	...	...	2	18	19	...	326	5
Sherbrooke.	8	45	5	4	1	140	...	...	117	...	...	17	0	1	...	43	0
Tangier.	10	92	5	2	3	14	10	...	14	10	...	3	10	8	...	51	3
Montague	1	6	...	...	...	744	...	...	744	...	...	8	18	...	...	328	18
Waverley	18	231	5	5	...	69	...	...	158	...	...	16	14	6	...	131	3
Oldham	28	175	8	5	3	40	...	...	3	...	...	5	10	...	...	16	6
Renfrew	9	50	4	2	2	...	...	...	...	...	...	...	...	...	...	...	...
Ovens*	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	89	709	33	23	10	1310	10	...	1278	10	...	16	18	...	...	1070	12

FEBRUARY.

Stormont	7	60	1	1	1	60	...	...	214	...	...	2	0	4	...	429	18
" Isaac's Harbor "	8	68	4	3	1	214	...	...	116	15	...	3	...	...	...	366	14
Wine Harbor.	9	70	5	4	1	116	15	...	78	...	...	16	18	2	...	65	8
Sherbrooke.	13	81	5	2	3	83	...	...	11	15	...	3	8	14	...	40	0
Tangier	2	8	...	...	...	11	15	...	699	...	...	9	10	2	...	323	0
Montague	18	275	5	5	...	69	...	...	254	9	50	6	16	6	...	85	17
Waverley	25	180	8	5	3	100	...	...	8	2	50	2	16	2	...	22	16
Oldham	18	40	4	2	2	25	...	...	9	11	76	...	10	...	...	1	4
Renfrew	8	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Ovens*	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	90	782	33	23	10	1309	10	...	1391	13	76	19	4	20	...	1335	0

MARCH.

Stormont	7	55	1	1	70	6	0	415	6	0	1	7	2	3	0	0	566	16	23
"Isaac's Harbor"	8	72	4	3	415	7	0	218	7	0	1	15	12	21	0	0	389	5	0
Wine Harbor	11	75	5	4	218	15	0	153	15	0	1	17	20	2	7	20	46	4	11
Sherbrooke	15	65	5	2	34	15	0	15	15	0	2	2	6	2	18	15	29	7	15
Tangier	3	42	5	5	15	15	0	728	15	0	2	10	18	2	6	12	387	7	18
Montague	18	330	7	4	728	107	0	107	15	0	1	4	19	9	0	0	127	13	3
Waverley	28	150	7	4	100	60	0	74	6	0	15	10	10	1	10	3	54	11	18
Oldham	10	42	4	2	60	7	0	7	7	0	55	10	10	0	12	13	3	17	23
Renfrew	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1
Ovens*	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1
Totals	100	831	32	22	10	1641	8	0	1620	11	55	19	13	21	0	0	1605	4	15

APRIL.

Stormont	8	55	2	1	1	60	0	0	105	15	0	3	10	18	5	0	371	13	16
"Isaac's Harbor"	11	91	4	3	1	*207	10	0	4307	10	0	1	4	16	10	0	481	5	13
Wine Harbor	13	117	5	4	1	202	0	0	202	0	0	1	4	26	6	0	249	18	8
Sherbrooke	3	14	5	2	3	26	0	0	26	0	0	1	16	19	0	0	21	16	12
Tangier	10	63	5	5	1	29	5	0	29	5	0	1	0	2	2	15	39	1	7
Montague	30	306	5	5	0	556	10	0	556	10	0	1	10	15	1	5	295	17	12
Waverley	27	116	7	4	3	200	0	0	145	11	0	1	0	16	4	5	151	14	17
Oldham	9	40	5	3	2	60	0	0	111	0	0	1	3	18	2	8	137	17	5
Renfrew	111	802	33	22	13	1441	5	0	1483	11	0	1	3	12	10	0	1740	4	18
Totals	111	802	33	22	13	1441	5	0	1483	11	0	1	3	12	10	0	1740	4	18

MAY.

[illegible]

JUNE.

[illegible]

JULY.

Stormont.	10	93	2	1	1	60	65	15	2	2	12	4	1	13	167	6	15
"Isaac's Harbor."	7	66	4	3	1	*332	*332	6	18	1	18	5	5	...	300	14	1
Wine Harbor	16	133	4	3	1	133	133	19	1	0	17	6	...	...	139	3	2
Sherbrooke.	5	69	6	3	3	46	21	17	...	8	8	...	...	...	8	2	...
Tanjor	4	40	...	...	...	10	10	10	2	...	...	2	...	...	19	12	15
Montague	10	295	6	5	1	800	670	...	...	15	3	2	18	3	507	11	6
Waverley	33	135	7	4	3	250	164	12	1	1	3	12	13	...	185	10	4
Oldham	12	40	5	3	2	90	102	12	1	0	13	6	...	...	105	8	12
Renfrew																	
Other and unproclaimed Districts.	54																0
Totals.	97	919	34	22	12	1722	1501	11	55	19	6	12	13	0	1445	18	7

AUGUST.

Stormont.	10	102	2	1	1	60	*425	5	1	4	9	3	...	...	518	10	1
"Isaac's Harbor."	8	83	4	3	1	425	*178	3	...	18	18	4	...	...	166	18	3
Wine Harbor	14	139	4	3	1	*178	50	5	...	17	15	1	11	12	44	6	3
Sherbrooke	5	55	6	3	3	50	42	10	2	11	...	2	15	7	103	18	12
Tanjor	4	33	...	...	...	42	94	...	...	15	23	1	1	...	709	15	...
Montague	10	197	6	5	1	834	240	...	...	11	9	5	10	20	141	0	3
Waverley	28	93	7	4	3	200	113	14	1	0	20	3	11	12	117	4	...
Oldham	12	44	5	3	2	120	...	...	...	...	...	...	...	...	...	0	0
Renfrew																	
Other and unproclaimed Districts.	46																0
Totals.	91	786	34	22	12	1910	2103	17	...	18	15	5	0	20	1874	12	22

* Quartz, Sand and Gravel.

SEPTEMBER.

Stormont,	11	102	2	1	1	80	53	15	1	2	12	8	10				99	17	6		
" Isaac's Harbor."	11	75	4	3	1	200	199	18	1	1	2	2	10				220	10	15		
Wine Harbor	15	107	4	3	1	266	266	5	1	8	2	6					378	1	1		
Sherbrooke	5	59	6	3	3	25	69		1	5	13	1	17	9			88	5	1		
Tangier	4	45				54	54		2	9	17	2	13	7			134	4	10		
Montague	10	278	6	5	1	937	937			18	6	1	10	5			855	3	3		
Waverley	30		7	4	3	222	18			15	20	3	3	6			176	2	1		
Oldham	9		5	3	2	100	91	5	1	4	18	1	5	3			111	19			
Renfrew																					
Other and unproclaimed																					
Districts		50													10	4	3	10	4	3	
Totals	95	836	34	12	12	1885	3	0	1894	1	0	1	4	2	8	10	0	10	4	3	
																		3	2074	11	16

OCTOBER

Stormont,	11	104	2	1	1	99	.....	71	16	.....	1	15	13	3	15	.....	129	5	.....
" Isaac's Harbor."	10	56	4	3	1	625	4	*625	4	.....	.....	10	21	16	10	.....	340	2	2
Wine Harbor	15	132	4	3	1	209	19	209	19	.....	1	6	13	8	3	.....	279	.....	.....
Sherbrooke	5	56	6	3	3	50	.....	74	.....	.....	1	2	20	1	11	.....	84	2	12
Tangier	4	38	1	1	1	110	.....	110	.....	.....	1	11	.....	3	3	8	170	18	3
Montague	10	277	6	5	1	764	.....	764	.....	.....	.....	16	.....	1	3	.....	610	19	20
Waverley	30	80	7	4	3	211	18	211	18	.....	.....	13	.....	2	14	4	138	2	.....
Oldham	8	35	5	3	2	100	.....	199	.....	.....	.....	7	19	.....	9	19	75	5	21
Renfrew	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other and unproclaimed	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Districts	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	93	778	36	24	12	2161	1	2265	17	.....	.....	16	04	16	10	.....	1830	12	10

NOVEMBER.

Stormont,	13	97	2	1	1	102	.....	120	.....	2	2	12	2	17	12	.....	235	.....
"Isaac's Harbor,"	10	70	4	3	1	*399	18	*399	18	.....	11	13	.....	2	10	.....	231	1
Wine Harbor,"	14	103	4	3	1	265	12	265	12	1	.....	8	.....	4	5	.....	265	5
Sherbrooke	5	57	6	3	3	135	.....	135	.....	.....	14	8	.....	1	16	4	121	4
Tangier	4	40	1	1	.....	65	.....	65	.....	1	16	13	.....	2	12	25	116	9
Montague	10	277	6	5	1	1012	.....	1012	.....	.....	17	10	.....	1	.....	.....	881	13
Waverley	30	106	6	4	2	300	.....	195	.....	.....	17	9	.....	5	10	20	169	16
Oldham	6	31	5	3	2	175	.....	138	6	.....	.....	5	.....	7	17	12	177	14
Renfrew	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Other and unproclaimed Districts	.....	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	92	778	36	23	11	2454	10	2330	16	.....	18	20	.....	7	17	12	2198	5

DECEMBER.

Stormont,	11	90	3	2	1	70	.....	53	10	.....	1	16	.....	4	.....	.....	96	15
"Isaac's Harbor	10	64	4	3	1	373	.....	*373	.....	.....	18	6	.....	2	10	.....	341	10
Wine Harbor	12	100	5	4	1	287	17	287	17	.....	18	.....	.....	4	5	.....	264	2
Sherbrooke	5	55	6	3	3	49	.....	20	.....	.....	1	18	.....	1	18	18	38	18
Tangier	4	30	1	1	.....	65	10	65	10	.....	1	16	.....	2	12	5	116	3
Montague	10	328	6	5	1	482	15	482	15	.....	17	16	.....	3	5	.....	426	8
Waverley	30	70	6	4	2	100	.....	74	15	.....	1	4	.....	3	.....	17	79	11
Oldham	3	31	5	3	2	100	.....	141	8	.....	.....	6	9	.....	10	11	45	1
Renfrew	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other and unproclaimed Districts	4	4	2	2	.....	21	10	21	10	.....	10	10	.....	1	17	16	20	1
Totals	89	772	38	27	11	1549	21	1520	5	.....	18	19	.....	4	5	.....	1428	11

(B.)

Statement shewing the average daily labor employed, the amount of Quartz crushed, (the yield of Gold per ton of Quartz,) the quantity of Gold from alluvial Mines, the yield of Gold, the maximum yield per ton, in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining, for Nine Months ending September 30th, 1864.

DISTRICTS.	Average men employed.	Crushing mills employed Sept. 30th, 64.	Steam Power.	Water Power.	Quartz, Sand and Gravel Crushed.	Yield per ton.	Gold fm. Alluvial Mines.	Total yield of Gold.	Maximum yield per ton.	Average yield for 9 months per man engaged in mining gold, \$18.50 per oz.
Stormont.	78	2	1	1	Tons. Cwt. Lb.	2 14 21		Oz. Dwt. Gr.		
"Isaac's Harbor"	77	4	3	1	391 10 00	1 02 18		1049 04 21	8 10 00	\$248 80
Wine Harbor	113	4	3	1	2738 00 00	1 07 08		3120 09 05	16 00 00	749 73
Sherbrooke	51	6	3	3	1909 12 00	1 15 11		2611 6 22	20 00 00	427 51
Tangier	37	6	3	3	468 17 00	2 2 15		363 2 00	2 7 20	131 67
Montague	279	6	5	1	304 15 00	12 17		649 8 23	3 10 00	324 50
Waverley	134	7	4	3	6979 14 00	15 12		4491 3 00	20 0 00	297 80
Oldham	42	5	3	2	1757 00 00	1 03 07		1362 15 08	103 14 00	188 14
Renfrew	19	1	1	1	750 6 00	6 1 38 11 3		874 05 6	6 1 00	385 00
Other and unproclaimed Districts.	830	35	23	12	17 00 00	0 19 00 38 11		43 13 19		42 54
					15316 14 00	3 14565 9 8		103 14 00		\$324 66

4 cwt. fm small lode.

(C.)

*Mines Department for Nine Months ending September 30th, 1864.***GOLD.**

DISTRICTS.	RECEIPTS.			Totals.	EXPENDITURES.					
	Rents.	Royalty.	Mill Sites, &c.		Salaries and Surveys.	Return of Rents.	Return of Royalty.	Royalty Commis'n.	Lands.	Totals.
Oldham	\$1988 00	\$651 80	\$30 00	\$2669 84	\$223 97	\$611 00	\$194 05	\$16 62	.....	\$1045 64
Renfrew	1417 36	408 57	20 00	1845 93	137 25	200 00	107 94	19 85	30 62	495 66
Waverley	2839 00	2073 28	.....	4912 28	356 21	684 00	492 94	93 86	2163 06	3790 07
Tangier	602 72	285 66	.....	888 38	498 00	32 00	160 33	.....	835 23	1525 56
Lawrencetown	20 00	.....	.....	20 00	72 30	.....	.....	.....	.....	72 30
Stormont	845 53	633 96	20 00	1489 49	145 60	90 00	6 74	11 42	.....	253 76
Wine Harbor	2832 66	1733 49	25 00	4591 15	261 25	313 00	71 23	86 58	77 50	809 56
Sherbrooke	3809 50	1654 56	5 00	5469 06	256 27	552 00	349 08	81 16	27 00	1265 51
Ovens	556 90	.....	.....	556 90	35 95	48 17	.....	1 87	.....	85 99
Montague	2224 00	241 22	.....	2465 22	243 00	.....	60 00	.....	924 85	1227 85
Wagmatcook	1300 00	.....	.....	1300 00	90 20	.....	.....	.....	.....	90 20
Unproclaimed	268 00	.....	.....	268 00	80 50	10 00	.....	.....	.....	90 50
Prospecting Licenses	176 00	.....	.....	176 00	.....	.....	.....	.....	.....	.....
Advertising and Printing .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	775 95
Law Expenses .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	246 50
Stationery .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61 85
Office Expenses .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	897 41
Totals	18869 67	7682 58	100 00	26652 25	2400 50	2540 17	1442 31	311 36	4058 26	12734 31

(C.)—Continued.

Mines Department for Nine Months ending September 30th, 1864,

OTHER THAN GOLD.

COUNTIES.	RECEIPTS.		Totals.	EXPENDITURES.		
	License to Search.	License to work.		Return License to Search.	Return License to work.	Totals.
Cape Breton	\$780 00	\$200 00	\$980 00	\$130 00		\$130 00
Pictou	180 00		180 00			
Inverness	520 00	50 00	570 00	20 00		20 00
Digby	60 00		60 00			
Annapolis	60 00		60 00	20 00		20 00
Colchester	80 00		80 00			
Hants	40 00		40 00	20 00		20 00
Richmond	120 00	50 00	170 00			
Victoria	100 00		100 00			
Halifax	20 00		20 00			
Antigonish	20 00		20 00			
Kings					50 00	50 00
Cumberland	440 00		440 00	40 00		40 00
Total other than Gold.....	2420 00	300 00	2720 00	230 00	50 00	\$280 00
Total Gold			26652 25			12734 31
			<u>\$293172 25</u>			<u>\$13014 31</u>

(D.)

Account of Receipts and Expenditures of Mines other than Gold, from 1st day of January to 19th day of May, 1864, whilst under the direction of the Crown Lands Department.

Counties.	RECEIPTS.			EXPENDITURES.		
	License to Search.	License to work.	Total.	Return Li- cense to search.	Surveys.	Total.
Cape Breton.....	\$800 00	.....\$50 00	.....\$850 00			
Cumberland.....	.....460 00	.....200 50	.....660 00			
Pictou.....	.....100 00		.....100 00			
Inverness.....	.....320 00	.....50 00	.....370 00			
Kings.....	.....80 00	.....50 00	.....130 00			
Hants.....	.....20 00		.....20 00			
Halifax.....	.....180 00		.....180 00			
Victoria.....	.....200 00		.....200 00			
Antigonish.....	.....80 00		.....80 00			
Annapolis.....	.....20 00		.....20 00			
Digby.....	.....20 00		.....20 00			
Guy'sborough.....	.....40 00		.....40 00			
Colechester.....	.....80 00		.....80 00			
Richmond.....	.....80 00		.....80 00			
Lunenburg.....	.....40 00		.....40 00			
	.....2520 00	.....350 00	.....2870 00			
Royalty.....			.....\$33745 60	.....290 00	.....251 60	.....541 60
			.....36615 60			Total.....541 60

(E.)

Mines Department, for Nine Months ending September 30th, 1864.

To amount expended, Gold account:			
Salaries and Surveys.....	\$2400 50		
Return Rents.....	2540 17		
Return Royalty.....	1442 31		
Commission paid for collecting Royalty.....	311 66		
Lands.....	4058 26		
Advertising and Printing.....	775 95		
Law Expenses.....	246 50		
Stationery.....	61 85		
Office Expenses.....	897 41		
Balance on Gold.....	13917 84		
	<u>\$26652 25</u>		
To amount expended other than Gold, subsequent to 19th May, 1864:			
Return License, to Search.....	\$230 00		
Return License to Work.....	50 00		
Balance other than Gold.....	2440 00		
	<u>\$2700 00</u>		
To amount expended, Gold.....			
".....	\$12734 31		
Paid Receiver General.....	280 00		
Cash on hand.....	\$16259 07		
	<u>98 87</u>		
	16357 94		
	<u>\$29372 25</u>		
To Surveys per Crown Land Department, from 1st January to 19th May, 1864.....			
Return License to Search.....	\$251 60		
Balance paid to Receiver General.....	290 00		
	36074 00		
	<u>\$36615 60</u>		
By Cash Received on Gold account:			
Rents.....	\$18869 67		
Royalty.....	7682 58		
Mill and Building Sites.....	100 00		
	<u>\$26652 25</u>		
By cash received Mines, other than Gold, subsequent to 19th May, 1864:			
Licenses to Search.....	\$2420 00		
Licenses to Work.....	300 00		
	<u>\$2720 00</u>		
By amount received Gold.....			
".....	\$26652 25		
other than Gold.....	2720 00		
	<u>\$29372 25</u>		
By Licenses to Search, per Crown Land Department, from 1st January to 19th May, 1864.....			
Licenses to Work.....	\$2520 00		
Royalty other than Gold.....	330 00		
	33745 60		
	<u>\$36615 60</u>		
Total balances to credit of Dept. for three quarters ending Sept. 30, '64:			
Mines other than Gold, per Mines Office, balance.....	\$2440 00		
" " " " per Crown Land Office, balance.....	36074 00		
Total other than Gold.....	\$38514 00		
Total Gold.....	13917 84		
Grand total.....	<u>\$52431 84</u>		

(F.) COMPARATIVE STATEMENT.
GOLD.

RECEIPTS, 1863.	EXPENDITURES, 1863.	RECEIPTS, 1864, for 9 months.	EXPENDITURES, 1864, for 9 months.
Rents Mining Areas.....\$11056 82	Salaries and Surveying.....\$2141 70	Rents Mining Areas.....\$18869 67	Salaries and Surveys.....\$2400 50
Building Sites.....199 00	Roads.....1253 95	Royalty.....7682 58	Return Rents.....2540 17
Sale of Wood.....57 20	Land.....14682 99	Building Sites.....100 00	Return Royalty.....1442 31
Royalty on Gold.....7291 50	Return Rents.....1020 00	Commission col. Royalty.....311 66	Land.....4038 26
Prospecting Licenses.....95 50	Return Royalty.....474 71	Land.....775 95	Printing.....246 50
	Commission col. Royalty.....231 20	Law Expenses.....61 85	Stationery.....807 41
	\$18700 02	Office Expenses.....139 17 84	Balance.....\$26652 25
Balance against.....4608 09	Printing.....693 47		Actual Balance in favor of Gold Fields on transactions three quarters contracted in 1863 was.....\$10761 68
	Stationery.....193 44		Balance for 9 months of 1864.....\$13917 84
	Office Expenses.....1065 65		Balance for 9 months of 1864.....\$3500 00
	\$23308 11		Land.....1400 00
	Law Expenses.....546 00		Return Royalty.....500 00
			5400 00
NOTE. — The expenditure for 1863			
contracted in 1863 was.....\$10761 68			
Balance in favor of Dept.....7938 34			
Produce of Gold 13 months, 1863:			
14,001 oz. 14 dwts. 17 gr. at 18.50, \$259032.35			
273624 days' labor, giving 35c. per day.			

1863.	1864.
Coal License, 12 months.....\$2030 00	Coal Licenses, 9 months.....\$5590 00
Royalty paid in 1863 for Coal raised in 1862.....30659 45	Royalty paid in 1864 for Coal raised on 1863.....33745 69
Expenses.....876 00	Expenses.....821 60
Balance against Gold.....32782 45	Coal Balance.....3514 00
Total Balance in favor of Mines in 1863.....\$28174 36	Total Balance favor Dept. for 9 months 1864, \$52431 84

Taking the loss on Gold by smelting from Mr. R. G. Fraser's operations for the last year, I find the average loss is $2\frac{1}{4}$ per cent, and taking the price of smelted gold at \$19.80 (the price at the commencement of the year being \$19.75 and it now selling at \$19.85) I find the value of the gold raised in the 9 months—
Oz. 14565 9
Less $2\frac{1}{4}$ per cent. 327 14
14237 15 at 19.80 \$281,907 50

Comparative Statement of Coals raised from the Mines of Nova Scotia during the year 1863 and three quarters of 1864.

MINE.	Lessee or Licensee.	Shipped and Sold in 1863.			Nine months ending 30th Sept., 1864.			
		Large. 1863.	Slack. 1863.	Total.	Shipped.		Raised.	
					Large.	Slack.	Large.	Slack.
Albion Mines.....	General Mining Association.....	175673	22640	198313	141363	17933	127401	20652
Sydney Mines.....	".....	102785	1588	104373	55656	.....	57435	3449
Joggins, Cumberland.....	".....	4425	223	4648	4080	915	4080	915
Lingan, C. B.....	Boggs.....	33907	151	36058	34103	324	29383	.....
Little Bras d'Or, (Collins' Mine).....	General Mining Association.....	2387	524	2911	.....	.....	.....	.....
".....	George L. Dix.....	1109	150	1259	3506	.....	3506	.....
".....	".....	726	79	805	.....	.....	.....	.....
Great Bras d'Or.....	C. J. Campbell.....	3542	426	3968	55544	8384	55544	8384
International (formerly Union) Mines.....	".....	3699	499	4198	5766	.....	5243	392
Glace Bay.....	Int'l Co., McLeod & Burchell.....	26209	515	26724	43580	4848	43580	4848
Clyde Mine, Big Glace Bay.....	Archbold & Co.....	484	24	508	4023	.....	6023	.....
Schooner Pond.....	Alex. & J. Campbell.....	1303	57	1360	4930	.....	6206	.....
Cow Bay, Block House Mine.....	Ross, Kay & Symonds.....	15690	.....	15690	45315	.....	40000	.....
".....	Belloni.....	11764	3606	15070	17069	4884	17069	4884
".....	Archibald & Co.....	.....	.....	.....	162	.....	162	.....
Mira Bay.....	Wilson & Co.....	540	.....	504	.....	.....	.....	.....
Little River, Richmond.....	McLeod & Tracy.....	888	211	1099	1167	210	1677	1377
Sea Coal Bay.....	J. L. Marmaud.....	219	150	369	150	150	150	150
North Sydney.....	J. Campbell.....	.....	32	32	150	150	150	150
River Hebert.....	Roach & Melness.....	6058	3050	9108	7322	.....	7322	.....
".....	Lawrence Company.....	.....	.....	.....	2020	.....	2680	.....
Maccan Mines.....	Victoria Company.....	.....	.....	.....	.....	.....	1300	.....
Fraser's Mines.....	Patrick Ward, John P. Lawson.....	1297	1171	2468	.....	.....	.....	.....
Cape Breton Coal Company.....	Pictou.....	.....	.....	.....	.....	.....	.....	.....
".....	H. N. Hyde, Agent.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	.....	394705	34646	429351	3767464	299524	3590514	350784
								406699

REPORT.

DEPARTMENT OF MINES,
Halifax, 10th January, 1868.

SIR,—

I beg leave to submit, for the information of His Excellency the Lieutenant Governor, the following Report upon the Mines of Nova Scotia, for the twelve months ending the 30th September last:

In reviewing the mining operations of last year, we have cause both for congratulation and regret.

In the Gold Mining, the success may be considered good, both in the increase of Gold obtained, and the average rate per ton of Quartz crushed; whilst the average remuneration for each man, “counting 313 days in the year, and the Gold at \$18.50 per oz.,” is two dollars and forty-four cents (2.44) per day — a result, I believe, without a parallel in any country.

Although the yield of Gold, when compared with some gold-producing countries, may appear small, the progress has been steady. In the year ending December 31, 1862, the amount raised was 6737 oz., and for the year ending September 30, 1867, it was 27,583 oz. And this progress, considering the number of paying mines in the old districts, and the promising localities outside of these districts that have been found during the past year will, I believe, be fully kept up; and when, too, we consider that between Cape Sable and Canseau we have a gold-bearing country over 250 miles long and fully 25 miles wide, in every part of which, as productive mines, may be found as any now worked, we cannot but believe that the Gold mining of Nova Scotia is only in its infancy.

We may also expect a large increase in the working of the poorer mines; leads are now operated upon profitably which, at the commencement of mining operations, could not have been worked, except at a loss, and there is no doubt that with the increased experience in mining, and in separating the gold from the ores, many leads, now deemed worthless, will be worked; and though under the present

system of manipulation the profits are large, yet it is well known that a large percentage of the Gold contained in the quartz is not saved.

STORMONT.

The mining in this district has for some time been confined to Isaac's Harbor, but this year prospecting to a considerable extent has been carried on at Seal Harbor; very large and rich boulders have been found, and I have lately been informed that a very promising lead has also been discovered. This discovery being on the same range, and about three miles east from the mines now worked at Isaac's Harbor, makes this field quite an extensive one. There are also some good water powers on the Seal Harbor River which can be used for crushing purposes. In the Country Harbor portion of this district there has been some prospecting done, and with a fair degree of success. This year, as compared with the last, gave an increase of 450 oz. with a much smaller quantity of Quartz crushed, and a larger yield per man. Although operations here have been somewhat limited, there is no reason to believe that they will continue so.

This district, taken as a whole, has always been a paying one, yet from its inaccessibility by land carriage, it has not hitherto been much known. It is only from the exertions of Messrs. Young & Hart of this city, connected with Mr. Charles Gallahea, and the "Victoria" Company, represented by Mr. Saunders, that the mining in this District has not been virtually abandoned; though it has never paid less than \$1.25 per day,—and that only for one year. This year it is nearly \$2.

WINE HARBOUR

District still shews a falling off, both in the quantity of Gold produced and paying qualities per man. This may partly be accounted for by the fact that an extensive tunnel is being cut across the metals, for drainage and prospecting purposes, preparatory to mining on an extensive scale. There have been large purchases made in this District by Capitalists, and we may see it again, as it was in 1863, the best paying District in the Province.

SHERBROOKE

Though second in quantity of Gold produced, is now, as it has ever been since 1864, the first in profit, giving Fifteen hundred and ninety two dollars and fifty-eight cents (1592.58) per man for 12 months,

and yielding an average of 1 oz. 9 dwt. and 8 gr. per ton, for 5809 tons of Quartz crushed; and to-day (Jany. 11) I was shown 633 oz. of Smelted Gold, the produce of 200 tons of Quartz, and this from the working of one mine in the month of December. We may expect much larger returns the coming year ; the number of applications for new ground are large, and preparations are making for extensive operations by both United States and Canadian capitalists.

From the increase of business in this District, it was found necessary for Mr. Pye, the Deputy Commissioner for Sherbrooke, and Wine Harbor, to devote his whole attention to Sherbrooke, and Mr. D. U. Crockett was appointed the Deputy for Wine Harbour.

TANGIER

Taken as a whole has not proved a success. In that part of the District lying near the Harbour, which caused so much excitement in the years 1862 and 1863, but little has been done during the past year ; although, as per Report of 1866 a different result was expected from the fact that the small claims had very generally been bought out by two Companies, and that the Returns would have been increased: and I cannot yet believe that in a District where such splendid specimens, so much rich ore, and so many leads are found, that good paying mines will not yet be discovered.

One of the Companies, it is understood, was compelled to stop work from want of means, occasioned by large outlay in Renfrew and Uniacke. The other Company stopped because it did not pay, but it is confidently stated that the Crusher was systematically robbed, and on this belief, the agent lately informed me that he intended to commence operations again. At Strawberry Hill there is a mine worked on a small scale, which pays well, and this further strengthens my opinion that it only wants economy in mining, with an "Act" that will make stealing Gold, (which has now grown to enormous proportions,) a business that will not pay, to make this part of the District a flourishing one.

That part of the District known as Old Tangier or "Mooseland," has advanced rapidly, and is proving remarkably rich both in ore and specimens. The Beneficiary Company's mine, under the superintendence of Mr. Adams, is proving highly remunerative, although he, too, has suffered from the same cause as those at the shore. The road during the past year, has also been much improved, and we may confidently

expect a large increase in the business at no distant date. Taken as a whole I see no cause for discouragement in the old District of Tangier.

MONTAGU

Is one of those districts that has fallen away since the publication of the last Annual Report of this Department. There has been but one mine worked with anything like vigor during the year, and this one was idle the first three months. The highest return was for July, being 81 oz. of Gold for 30 men employed; the average yield of Gold per ton of Quartz crushed is higher than any other district, being 1 oz. 19 dwt. I am surprised that the attention of miners is not more turned to this district, as it is not over six miles from Dartmouth; the leads worked are known to be rich, and the untested leads numerous. This district, like Tangier, is suffering a depression which I believe will not last.

WAVERLEY

Though it has lost its place as first of the districts as to quantity of Gold obtained, Waverley still occupies a prominent and attractive position among the gold-producing districts. There is no place in the Province, so far as I can learn, where mining is so economically carried on, and crushing so cheaply done, as in this district. A lead is now worked averaging 15 inches in thickness, at a depth of 300 feet, at a cost of 8 dwts. to the ton. There is one heavy drawback in this district—in the depth of the soil—and this, I believe, is the chief cause of the falling off. Although the yield has been large, the width of ground mined was very small; it being in fact chiefly confined to one lead. From this narrow strip, up to September 30, 1867, 56,758 tons of Quartz were mined and crushed, giving 36,101 oz. of Gold. Can it be supposed that the district has run out (when as is well known from the cause above stated) the district has hardly been prospected at all?

OLDHAM

Has never done so well as in the past year. The yield of Gold was 1359 oz., giving four hundred and eighty-three dollars and eighty-eight cents (\$483.88) for each man per year; whilst in 1864, “the year of its largest yield,” there was raised 1362 oz., only giving one hundred and eighty-eight dollars and fourteen cents (\$188.14) per man, and for 1866 the yield was 776 oz., giving three hundred and ninety-nine dollars and sixty-six cents (\$399.66) per man, this being the

smallest yield of Gold since 1862. From the above statement it may be fairly inferred that the periodical depression to which all are so liable has in this district passed; and I shall be surprised, indeed, if in a short time, Oldham does not take its place as a leading district.

RENFREW

From being third in rank last year, and about fifth in years previous, has placed itself first this year, having produced nearly 900 oz. more Gold than any other district, and is only second in point of profit to Sherbrooke, each man employed having earned eight hundred and ninety-five dollars and thirty cents (\$895.30) for the year. This result may well inspire the miners in depressed districts with confidence. From being one of the poorest districts, it has in a short time become one of the most productive.

LAWRENCETOWN

This year does not figure as a gold-producing district, it being classed in the tables among the "Unproclaimed and other Districts"; this is not because there has been nothing done, but because there was only a small amount of Gold produced.

This district, though amongst the first discovered, was not until the year 1866 considered of much value. There have been three Crushers built in the district, but of such inferior quality, that they had to be abandoned.

During last year some good leads were found, and operations have been commenced on a large scale. There are two good crushers now nearly completed, and a large quantity of promising ore already mined. The discoveries of gold-bearing leads during the year have been considerable, shewing a large surface for mining operations, and there is no doubt, from present appearances, that Lawrencetown will in the future be a leading district.

UNIACKE

Is a new district in which some prospecting licenses were taken in 1865. During 1866 some discoveries were made, a small crusher was built about three miles easterly from the Uniacke Station, and a road made from the Station to the Crusher. During the past summer the old road was repaired, and a new one made running through the district. Owing to the small amount expended on these roads, and

the want of good material, they are as yet barely passible; but being so near a railway station the want of roads is not so much felt as in some other districts. Two additional crushers have been lately built, and the district has made steady and rapid progress. The ground already applied for and under Prospecting License and Lease is large, and the surface over which workable leads have been found, equals any district in the Province. The success in prospecting may be accounted for by the small depth of surface soil, a large portion of which is not more than two feet deep. This district only requires capital and skill to make it one of the most productive.

OVENS.

This district has not improved, and yet it can hardly be accounted for as the quartz is rich. The leads most worked are small, running through bands of slate, which have proved to contain gold in paying quantities; there are also leads of considerable thickness, but until a good crusher is built, any marked progress cannot be expected. A company is now at work with, I understand, good prospects of success.

DISCOVERIES.

There has been a revival of old discoveries, and some new ones were made during the year. I shall only notice those that from present appearances are likely to become of importance.

MUSQUODOBOIT.

This Discovery, lying between Old Tangier and Upper Musquodoboit, which was made in 1865, was considered very encouraging at the time, but from the want of roads little or nothing has been done since; there is now a prospect of a crusher being built this winter.

KILLAG.

On this branch of the Middle River of Sheet Harbor, some promising gold-bearing leads have been found. Gold has also been discovered at Fifteen Mile Stream, a branch of the East River of Sheet Harbor, and a crusher is likely to be built this winter. On both of these Sheet Harbor streams, water powers are attainable.

REPORT
OF
CHIEF COMMISSIONER OF MINES
FOR THE
PROVINCE OF NOVA SCOTIA,
FOR THE YEAR
1867.



HALIFAX, N. S.
PRINTED BY BLACKADAR BROS.
1868.

REPORT.

DEPARTMENT OF MINES,
Halifax, 10th January, 1868.

SIR,—

I beg leave to submit, for the information of His Excellency the Lieutenant Governor, the following Report upon the Mines of Nova Scotia, for the twelve months ending the 30th September last:

In reviewing the mining operations of last year, we have cause both for congratulation and regret.

In the Gold Mining, the success may be considered good, both in the increase of Gold obtained, and the average rate per ton of Quartz crushed; whilst the average remuneration for each man, "counting 313 days in the year, and the Gold at \$18.50 per oz.," is two dollars and forty-four cents (2.44) per day — a result, I believe, without a parallel in any country.

Although the yield of Gold, when compared with some gold-producing countries, may appear small, the progress has been steady. In the year ending December 31, 1862, the amount raised was 6737 oz., and for the year ending September 30, 1867, it was 27,583 oz. And this progress, considering the number of paying mines in the old districts, and the promising localities outside of these districts that have been found during the past year will, I believe, be fully kept up; and when, too, we consider that between Cape Sable and Canseau we have a gold-bearing country over 250 miles long and fully 25 miles wide, in every part of which, as productive mines, may be found as any now worked, we cannot but believe that the Gold mining of Nova Scotia is only in its infancy.

We may also expect a large increase in the working of the poorer mines; leads are now operated upon profitably which, at the commencement of mining operations, could not have been worked, except at a loss, and there is no doubt that with the increased experience in mining, and in separating the gold from the ores, many leads, now deemed worthless, will be worked; and though under the present

system of manipulation the profits are large, yet it is well known that a large percentage of the Gold contained in the quartz is not saved.

STORMONT.

The mining in this district has for some time been confined to Isaac's Harbor, but this year prospecting to a considerable extent has been carried on at Seal Harbor; very large and rich boulders have been found, and I have lately been informed that a very promising lead has also been discovered. This discovery being on the same range, and about three miles east from the mines now worked at Isaac's Harbor, makes this field quite an extensive one. There are also some good water powers on the Seal Harbor River which can be used for crushing purposes. In the Country Harbor portion of this district there has been some prospecting done, and with a fair degree of success. This year, as compared with the last, gave an increase of 450 oz. with a much smaller quantity of Quartz crushed, and a larger yield per man. Although operations here have been somewhat limited, there is no reason to believe that they will continue so.

This district, taken as a whole, has always been a paying one, yet from its inaccessibility by land carriage, it has not hitherto been much known. It is only from the exertions of Messrs. Young & Hart of this city, connected with Mr. Charles Gallahue, and the "Victoria" Company, represented by Mr. Saunders, that the mining in this District has not been virtually abandoned; though it has never paid less than \$1.25 per day,—and that only for one year. This year it is nearly \$2.

WINE HARBOUR

District still shews a falling off, both in the quantity of Gold produced and paying qualities per man. This may partly be accounted for by the fact that an extensive tunnel is being cut across the metals, for drainage and prospecting purposes, preparatory to mining on an extensive scale. There have been large purchases made in this District by Capitalists, and we may see it again, as it was in 1863, the best paying District in the Province.

SHERBROOKE

Though second in quantity of Gold produced, is now, as it has ever been since 1864, the first in profit, giving Fifteen hundred and ninety two dollars and fifty-eight cents (1592.58) per man for 12 months,

and yielding an average of 1 oz. 9 dwt. and 8 gr. per ton, for 5809 tons of Quartz crushed; and to-day (Jany. 11) I was shown 633 oz. of Smelted Gold, the produce of 200 tons of Quartz, and this from the working of one mine in the month of December. We may expect much larger returns the coming year ; the number of applications for new ground are large, and preparations are making for extensive operations by both United States and Canadian capitalists.

From the increase of business in this District, it was found necessary for Mr. Pye, the Deputy Commissioner for Sherbrooke, and Wine Harbor, to devote his whole attention to Sherbrooke, and Mr. D. U. Crockett was appointed the Deputy for Wine Harbour.

TANGIER

Taken as a whole has not proved a success. In that part of the District lying near the Harbour, which caused so much excitement in the years 1862 and 1863, but little has been done during the past year ; although, as per Report of 1866 a different result was expected from the fact that the small claims had very generally been bought out by two Companies, and that the Returns would have been increased: and I cannot yet believe that in a District where such splendid specimens, so much rich ore, and so many leads are found, that good paying mines will not yet be discovered.

One of the Companies, it is understood, was compelled to stop work from want of means, occasioned by large outlay in Renfrew and Uniacke. The other Company stopped because it did not pay, but it is confidently stated that the Crusher was systematically robbed, and on this belief, the agent lately informed me that he intended to commence operations again. At Strawberry Hill there is a mine worked on a small scale, which pays well, and this further strengthens my opinion that it only wants economy in mining, with an " Act " that will make stealing Gold, (which has now grown to enormous proportions,) a business that will not pay, to make this part of the District a flourishing one.

That part of the District known as Old Tangier or " Mooseland," has advanced rapidly, and is proving remarkably rich both in ore and specimens. The Beneficiary Company's mine, under the superintendence of Mr. Adams, is proving highly remunerative, although he, too, has suffered from the same cause as those at the shore. The road during the past year, has also been much improved, and we may confidently

expect a large increase in the business at no distant date. Taken as a whole I see no cause for discouragement in the old District of Tangier.

MONTAGU

Is one of those districts that has fallen away since the publication of the last Annual Report of this Department. There has been but one mine worked with anything like vigor during the year, and this one was idle the first three months. The highest return was for July, being 81 oz. of Gold for 30 men employed; the average yield of Gold per ton of Quartz crushed is higher than any other district, being 1 oz. 19 dwt. I am surprised that the attention of miners is not more turned to this district, as it is not over six miles from Dartmouth; the leads worked are known to be rich, and the untested leads numerous. This district, like Tangier, is suffering a depression which I believe will not last.

WAVERLEY

Though it has lost its place as first of the districts as to quantity of Gold obtained, Waverley still occupies a prominent and attractive position among the gold-producing districts. There is no place in the Province, so far as I can learn, where mining is so economically carried on, and crushing so cheaply done, as in this district. A lead is now worked averaging 15 inches in thickness, at a depth of 300 feet, at a cost of 8 dwts. to the ton. There is one heavy drawback in this district—in the depth of the soil—and this, I believe, is the chief cause of the falling off. Although the yield has been large, the width of ground mined was very small; it being in fact chiefly confined to one lead. From this narrow strip, up to September 30, 1867, 56,758 tons of Quartz were mined and crushed, giving 36,101 oz. of Gold. Can it be supposed that the district has run out (when as is well known from the cause above stated) the district has hardly been prospected at all?

OLDHAM

Has never done so well as in the past year. The yield of Gold was 1359 oz., giving four hundred and eighty three dollars and eighty-eight cents (\$483.88) for each man per year; whilst in 1864, “the year of its largest yield,” there was raised 1362 oz., only giving one hundred and eighty-eight dollars and fourteen cents (\$188.14) per man, and for 1866 the yield was 776 oz., giving three hundred and ninety-nine dollars and sixty-six cents (\$399.66) per man, this being the

smallest yield of Gold since 1862. From the above statement it may be fairly inferred that the periodical depression to which all are so liable has in this district passed ; and I shall be surprised, indeed, if in a short time, Oldham does not take its place as a leading district.

RENFREW

From being third in rank last year, and about fifth in years previous, has placed itself first this year, having produced nearly 900 oz. more Gold than any other district, and is only second in point of profit to Sherbrooke, each man employed having earned eight hundred and ninety-five dollars and thirty cents (\$895.30) for the year. This result may well inspire the miners in depressed districts with confidence. From being one of the poorest districts, it has in a short time become one of the most productive.

LAWRENCETOWN

This year does not figure as a gold-producing district, it being classed in the tables among the "Unproclaimed and other Districts"; this is not because there has been nothing done, but because there was only a small amount of Gold produced.

This district, though amongst the first discovered, was not until the year 1866 considered of much value. There have been three Crushers built in the district, but of such inferior quality, that they had to be abandoned.

During last year some good leads were found, and operations have been commenced on a large scale. There are two good crushers now nearly completed, and a large quantity of promising ore already mined. The discoveries of gold-bearing leads during the year have been considerable, shewing a large surface for mining operations, and there is no doubt, from present appearances, that Lawrencetown will in the future be a leading district.

UNIACKE

Is a new district in which some prospecting licenses were taken in 1865. During 1866 some discoveries were made, a small crusher was built about three miles easterly from the Uniacke Station, and a road made from the Station to the Crusher. During the past summer the old road was repaired, and a new one made running through the district. Owing to the small amount expended on these roads, and

the want of good material, they are as yet barely passible; but being so near a railway station the want of roads is not so much felt as in some other districts. Two additional crushers have been lately built, and the district has made steady and rapid progress. The ground already applied for and under Prospecting License and Lease is large, and the surface over which workable leads have been found, equals any district in the Province. The success in prospecting may be accounted for by the small depth of surface soil, a large portion of which is not more than two feet deep. This district only requires capital and skill to make it one of the most productive.

OVENS.

This district has not improved, and yet it can hardly be accounted for as the quartz is rich. The leads most worked are small, running through bands of slate, which have proved to contain gold in paying quantities; there are also leads of considerable thickness, but until a good crusher is built, any marked progress cannot be expected. A company is now at work with, I understand, good prospects of success.

DISCOVERIES.

There has been a revival of old discoveries, and some new ones were made during the year. I shall only notice those that from present appearances are likely to become of importance.

MUSQUODOBOIT.

This Discovery, lying between Old Tangier and Upper Musquodoboit, which was made in 1865, was considered very encouraging at the time, but from the want of roads little or nothing has been done since; there is now a prospect of a crusher being built this winter.

KILLAG.

On this branch of the Middle River of Sheet Harbor, some promising gold-bearing leads have been found. Gold has also been discovered at Fifteen Mile Stream, a branch of the East River of Sheet Harbor, and a crusher is likely to be built this winter. On both of these Sheet Harbor streams, water powers are attainable.

MOSHER'S RIVER.

A number of Prospecting Licenses have been granted in this locality, but I have not heard what success has been met with.

CRAGGY LAKE, SHIP HARBOR.

This is a somewhat old discovery, but little has as yet been done; appearances are encouraging.

UPPER STEWIACKE.

There was quite an excitement here during the past summer, a number of Prospecting Licenses and Leases were applied for, prospecting was carried on with considerable success, and a crusher is likely to be built. A stream running through the district affords good opportunity for crusher sites. This locality promises to become of importance.

GOLD RIVER.

Gold has been long known to exist in this locality, and there is a crusher now building by a company, which will determine whether it exists in paying quantities or not.

GENERAL REMARKS.

Since Gold Mining has become a permanent business, the excitement consequent upon a new discovery does not cause the rush that it once did. The miner now weighs his prospects as narrowly as a merchant would his interest in purchasing a ship, and he will not go to the expense of building roads, and erecting a crusher, until the locality is prospected, so as to make success almost a certainty. This prudence and absence of excitement on the part of the miner has brought into operation another business, that of the prospector.

These men, generally without much means but possessed of considerable knowledge gained by working in the mines, on finding a promising looking locality, apply for a Prospecting License; others follow, applying for lands adjoining, until sometimes a very large surface is occupied. When one makes a discovery it is a guide to his neighbour; a paying lead is almost sure to be found, which is generally sold to some person or company willing to risk the build-

ing of a crusher, and the opening of the mine. By proceeding in this cautious way, without any very great loss in case of failure, and with good profits in case of success, the mines are opened.

Organized companies grumble sometimes that people not having the means to mine, hold so much ground, and allege that if they could get ground at first cost, near to where a good lead has been found, they would carry on active operations; but they forget that it was the labor of the poor miner that brought the locality into notice.

It is now well known that companies prove to be poor prospectors, and that laborers employed to prospect seldom find anything; but the case is different when men take the pick and shovel to prospect for themselves.

The advantages of this system are so well known, that some of our foremost and most successful miners, will have nothing to do with any property, until it is proved to be good, for which they are willing to pay and do pay high prices. It may be said that all this may be very cautious, but it is very slow. True, but progress is made, and under the system the profits are such as no other country can shew, taking Gold Mining as a whole.

COAL MINES.

We have to regret a large falling off in the amount of coal raised and sold during the year, as compared with the year ending Sept. 30th, 1866. The deficiency in Nova Scotia proper being, in round coal, 75,286 tons, small, 4464 tons; in Cape Breton, round coal, 38,610 tons, slack 863 tons; in all 119,224 tons, which may be accounted for by the abrogation of the Reciprocity Treaty. We have some reason to hope that present arrangements with the United States will be modified, and that our trade relations with that great market for the products of our coal fields may be restored. Before, however, any great increase of the coal trade can be expected, there will have to be largely increased facilities for shipping, so that vessels will not, as in times past, have to wait 4 or 5 weeks for their turn to load, thereby largely increasing freight and other charges.

In last year's report it was confidently expected, from the large increase of sales that year for home consumption and in the neigh-

Neighboring Colonies, that the loss of the trade with the United States would be partially if not fully made up; but these expectations have not been realized, although the falling off has principally been "Other Countries." There has also been a decrease in Home Consumption of 1983 tons, and Neighboring Colonies 3379 tons.

In the mining of other minerals, Lead, Copper, &c., little progress is made. Prospecting operations for Lead have not entirely ceased, but I do not learn that they have been attended with any discovery of importance. Copper has been mined near Tatamagouche, and I am informed that the operations are being extended.

The accompanying report of the Inspector of Mines, gives a detailed description of the works at the several mines and collieries in the Province, and with the tables in the Appendix, make it unnecessary for me to go more fully into their description.

In the Appendix the usual tables are given. The Financial Statement shews an increase in receipts, and a small decrease in expenditure as compared with last year. The receipts for 1866, on gold account, were \$18,201.99. Coal, \$58,109.75, making the receipts for the year \$76,311.74, and the expenditure for the same period \$16,547.21, leaving a balance in favor of the department of \$59,764.53. The receipts for 1867 on gold account were \$23,879.13; coal, \$69,916.00, making for the year \$93,795.13. The expenditure was \$13,724.62, leaving a balance in favor of the department of \$80,070.51, an increase as compared with 1866 of \$20,305.98.

The increase in the Gold receipts is caused chiefly by enlarged mining operations and better results. The increase from Coal arises from two causes. In 1865 an amendment to the Mines Act was passed, making the Royalty payable quarterly, whilst previous to that date it was payable yearly, so that part of the Royalty on coal raised has been paid during the current year. There has also been some progress made in collecting arrearages from former years, of which there is still a considerable amount due, an account of which will be furnished. The decrease of expenditure this year is principally due to "Return Royalty." In Waverley a large part of the gold was obtained from free claims, the Royalty from which had to be returned.

In the account of expenditure will be found some appropriations

for roads. Admitting the necessity of these roads, I have a doubt as to the wisdom of making them under the auspices of the Mines Department. If they are of any benefit, they must benefit the county as well as the mines, and in case they are paid from County Grant or General Revenue, the members for the county will in most cases see that the road is needed, and the money properly expended. By the present course a commission may be given, and an order to the Commission of Mines to pay the money, without either the representatives for the county or the Department of Mines having any effective control over the expenditure.

The necessity for a revision of the Mines Act appears to me to be urgent, particularly with a view of having a more complete system of registration of leases and transfers. Under the present Act it has become a most difficult and complicated business, and one that is sometimes accompanied with a good deal of risk and uncertainty, to make out the titles to mining properties.

Coal Leases are made in duplicate, one being filed in this office, the other delivered to the Lessee; and in case of transfer, leave has to be obtained by License from the Government; but there is no obligation on the part of either the Transferrer or Transferee to furnish a copy of transfer or license to the Mines Department.

In the Gold Mines applications are made for areas, and in many cases Leases are never issued. Parts and shares are conveyed by most informal documents, and this system continued for years, makes the granting of Licenses when asked for, not only a difficult but dangerous business. When a Lease has been issued, the difficulty is less, though not a great deal improved. In case of a transfer at present the only way the Transferee can get the Lease in his own name is to surrender and apply anew, he then delivers up the Lease with perhaps a number of these informal transfers, of which we have to judge the validity. Sometimes the Leases are lost, thereby depriving the Department of the small safeguard that their possession would give us. Sometimes a party holding a Lease will sell certain shares and give a transfer; at the same time there is nothing to prevent the original Lease being brought to this office and surrendered, and a new lease taken out in some other name, thus depriving the transferee of any claim to the mine in question. Further, in case of attachment or other process, we have now no protection. In

several cases it has only been from information accidentally received from outside sources, that after such proceedings parties have been prevented making a surrender and having new title issued, the responsibility being thus virtually thrown on the Department without any means to prevent it. As a remedy, I would recommend in case of Lease (other than Gold) that the license to transfer be in duplicate, one copy filed and registered in this office, and a certificate of registry endorsed on the other copy, to be kept by the Lessee; the transfer to be treated in the same manner. No transfer to be legal until such registration be made and certified.

In case of Gold Leases, there should first be made a difference in the holding where Leases are issued and where no Leases are issued. At present one is as good as the other, excepting that a Lease is a certificate that the holder at the date of the Lease was the owner. And where there is no Lease, there will be a receipt for the money paid when the application was made; in many cases this receipt gives no claim, as the areas may belong to some other person; in both cases a notice must be served ten days before forfeiture is completed. I would recommend in the case of a Lease, the procedure in forfeiting be the same as at present, and where no Lease is issued, if within ten days after the commencement of a quarter, the quarterly returns are not made, and if after four full quarters ("parts of quarters not counted") the requisite labor has not been performed, "the proof being taken from the Quarterly Returns," or any other reason for forfeiture, according to the Act — their forfeiture to be declared without any further proceedings. Such an amendment would make it the interest of parties to take out Leases.

In respect to those Leases, which are in duplicate, (one copy being filed in the Mines Office, and the other delivered to the Lessee,) I would recommend that the Act be amended, requiring all Leases issued after the passing of this amendment to be registered, and a certificate of registry endorsed on the copy delivered to the Lessee; also all copies of Leases then in the hands of Lessees "that have not been forfeited, or in any other way be void," to be registered and certified as above; and if not so registered, and certificate so endorsed within twelve months from the date of the passing of this Act, then such Leases to become void.

In case of Lease, where there is more than one Lessee, a statement in duplicate should be made, signed "under seal and witnessed" by

all of the Lessees, stating the proportions or part owned by each. A copy to be attached to each duplicate of the Lease, and to be registered and certified as above. Transfers to be in duplicate and registered, with certificates endorsed, the same as the Leases and statements; and such registry and certificate, as an evidence of title, to have the same effect, as in the case of the registry of deeds, in real estate; the forms for statements and transfers to be approved by the legal adviser of the Crown, and to be furnished by the Department.

In case of lease to companies, a copy of their charter or act of incorporation should be forwarded to this office. Also on any change of officers, a notice properly signed and sealed with the seal of the company, giving the names of the newly appointed officers, so that it may be known who are the proper persons to make transfers, &c.; and until such notice is received, the acts of the old officers to be legal so far as the business in this office is concerned.

In case of Mortgage, Bill of Sale (as collateral security) Attachment, Judgment, Execution, or any process whatever, with their several releases or discharges, notice should be filed in this office, and until such notice is filed, such proceedings are not to interfere with any rights that the Lessee may have, and are not to invalidate any act that may have been performed prior to the filing of such notice.

The above plan of Registration would for a time, at least, entail a considerable amount of extra labor in this office. In the report of last year, it was recommended that there should be charged a small fee for searches; but considering the fact that most of the searches are made for the protection of the Department, and that it would be difficult in some cases to decide when such searches should or should not be paid for, I would recommend instead that a small charge be made for registration and certificate.

There are several amendments to the existing Act that might be made with advantage to the mining interests that need not be referred to in this report; but there is one that must not be overlooked. I refer to an Act passed last session to prevent the stealing and selling of gold by miners. The Act in question is almost inoperative, in proof of which I may state that two pedlars belonging to Halifax (one of whom at least has been in the business for years) were caught with the gold in their possession, within the prescribed distance, but in a short time were released on bail, and it is said that the most experienced of the two has commenced his old business.

To give an idea of the extent of this traffic, Mr. Burkner, at one time lost from his crusher, what he and others considered at a low calculation would be 150 ounces of gold. One of the parties referred to above had a complete set of apparatus in his house in Halifax for reducing and smelting the ores, and has been known to sell as much as 30 ounces of gold at a time. I do not think it proper to make any suggestions as to what amendment should be made, as I feel it is only necessary to refer to the subject to have a remedy provided by the Government.

As a part of this Report I append that of the Inspector of Mines, the two comprising a full report upon the affairs of the Department of Mines for the past year.

I have the honor to be,

Your obedient servant,

ROBERT ROBERTSON.

The Honorable the PROVINCIAL SECRETARY.

INSPECTOR'S REPORT.

DEPARTMENT OF MINES,
Halifax, December 20, 1867.

SIR,—

Although the mining operations in the Province, on which I have now the honor to submit the following Report, have not during the past year been characterized by that activity which prevailed in the preceding year, and the returns of Coal raised show a diminution of nearly 21 per cent., it is nevertheless a cheering fact that not only have additional Mines been opened, but that preparations are also being made at others for a considerable extension of the powers of production. The character of these operations will be stated in due course; and I proceed, therefore, to give such details of the progress and condition of the various Mines as the circumstances of their position require. In most of them the limited extent of the operations affords so little either for remark, or for addition to the details given last year, that the notice of them must be necessarily brief.

CUMBERLAND COUNTY.

In this County only one Colliery has been kept steadily at work during the whole of the year: this exception is the Joggins Colliery, the operations in which have been confined to an extension of the east level, and of the workings in connection therewith. The seam is unaltered in character, and no noteworthy change of any kind has occurred either in the mine or in the

general arrangements. The expenditure during the year is stated in the returns as follows :

Adits and Levels	\$570 00
Drains, &c	320 00
Machinery	420 00
Houses	700 00
Total	<u>\$2010 00</u>

At the Victoria Colliery, very little has been done during the year ; operations were suspended in the early part of the year and have not since been resumed : the extent and position of the workings are therefore almost unaltered. The mine is now filled with water. The Lawrence Colliery has continued inoperative during the whole of the year and has now been unworked upwards of two years.

At the Macan Colliery very little coal was raised during the first six months of the year ; the entire operations being stopped for nearly the whole of that time. In April the mine was re-opened and the slope driven one hundred feet further to the dip, and levels turned on each side. The upper East and West levels and the workings to rise of them have also been extended. An expenditure is returned on

Slope	\$1060 00
Adits and Levels	220 00
Drains, &c	420 00
Machinery	832 00
Total	<u>\$2532 00</u>

With the exception of the first quarter of the year, nothing has been done at the Chiegnecto Colliery, and it, as well as the St. George, from which no coal has been raised during the year, is now filled with water. In the New York and Acadia mine the only work done has been the opening of the seam by levels driven on each side of the slope, and the erection of a steam engine to hoist the coal.

PICTOU COUNTY.

In this important district, although the sale of coal during the year is upwards of 73,900 tons less than last year, much has been done towards a considerable extension of the productive powers of the principal mines. At the Albion mines, the chief operations have been in the Western district of the Colliery in consequence of an accident that

occurred in the Eastern district in February last. The workings had for some time previous given off small quantities of gas which had occasionally been ignited on blasting the coal, but had been easily extinguished. On this occasion there appears to have been a larger quantity of gas than usual, and having caught fire it continued to burn among the coal brought down by the shot, although several buckets of water were thrown upon it at once, water being kept in readiness for that purpose. As these proved ineffectual, recourse was had to the effect of a concussion of the air, by firing a small cannon which was also kept prepared: this appears, however, to have produced only a momentary effect and the coal having caught fire, the smoke from it increased so rapidly that the workmen were obliged to withdraw. The Manager Mr. Hudson, finding that the fire was spreading along the face of the coal and that access to it was impossible in consequence of the dense smoke, with much promptitude, decided to turn the water from the East river into the workings. Fortunately the means of doing this with very little delay already existed, and the water was allowed to flow into the mine until the workings were filled; and they are at present in that condition. This district of the mine has therefore been abandoned until the new operations now in hand are completed. These consist of the sinking of two shafts, one of which was begun last year, to the dip of the workings in the Eastern district, and the erection of suitable machinery in connection therewith. One of these shafts is intended to be used for pumping only: the size of it is 8 feet square, and it is now nearly 600 feet deep. A powerful pumping engine, 62 inch cylinder, on the direct action principle is to be placed at this shaft. The other shaft, the size of which is 12 ft., by $9\frac{1}{2}$ ft., will be the working shaft. Its present depth is about 800 feet, and an engine of 160 horse-power, is in course of erection near it. This important extension of these works by which the produce of the mine will be largely increased, is being carried forward with great activity and will be brought to completion in the course of next year. By means of these shafts not only will a large extent of coal be won, but the water in the workings to the rise will also be gradually taken out, and the district recovered.

From the cause stated, the coal worked during the year, has been principally from the West district and the extension in the whole mine, in the Main and Deep-seams has in consequence been in that direction. A large quantity of coal has been obtained from the main

seam pillars, the operations in connection with which have been successfully performed. The returns show an expenditure at this Colliery during the year on

Shafts and Slopes	\$25,935 66
Drains, &c	1,881 58
Machinery	31,038 73
Houses	9,256 20
Railway Extension	5,217 48
Total	<u>\$73,329 65</u>

ACADIA.

At this Colliery the principal operations have been on the seam opened last year on the Carmichael area. The slopes have been driven to the dip about 130 yards, levels have been turned on each side and working places prepared. A shaft has also been sunk for the purpose of ventilation. Considerable progress has been made in opening out this seam for extensive working; a more powerful engine for hoisting is about to be erected, and the railway connecting the operations on the Fraser area with the Nova Scotia Railway, is being extended to this mine.

Several houses have been erected by private parties near the mine, and the usually rapid growth of mining villages appears to have begun.

In the McGregor seam a few working places have been kept going to the west, but the operations have been limited in character. No further workings have been made in the oil coal. The Branch line to the Nova Scotia Railway has not yet been put to use, nor has any shipping place been yet provided; the construction of the latter has, however, I understand been decided upon and it is purposed to have it and the railway completed without further delay. These mines will then be in a position to add considerably to the yield of coal in this County.

The expenditure is given in the return as follows :

Shafts and Slopes	\$10,264 02
Adits and Levels	10,695 10
Drains, &c	7,497 79
Machinery	8,592 67
Houses	5,364 22
Total	<u>\$42,413 80</u>

NOVA SCOTIA.

Operations at this Colliery, have been nearly altogether suspended during the year, the amount of coal raised being only 41 tons. There have not been any additional erections of any kind, nor beyond the storing of timber and sleepers, has any preparation been made for the construction of either a railway or a shipping place.

An expenditure is returned on

Adits and Levels	\$1,200 50
------------------------	------------

BEAR CREEK.

Since this Colliery passed into the hands of the Intercolonial Company the operations have been chiefly of a preparatory character. A small quantity of coal has been taken out of the shaft sunk by Mr. Campbell, but the principal operations have been confined to a careful exploration of the crop of the seam, with a view to a judicious selection of the most suitable position in which to make an effective winning. A pair of slopes have recently been begun, which it is proposed to connect with a shaft to be sunk to the dip, and preparations are being actively carried on for a rapid developement of the mine. A railway is in course of formation to the Middle River, and other necessary arrangements are being made to have the Colliery in effective working order, as early as possible next year.

The expenditure is stated in the returns as follows :

Drains, &c.....	\$ 250 00
Houses	2,000 00
Prospecting	5,519 01
Total	<u>\$7,769 01</u>

MONTREAL AND PICTOU.

The operations in this mine have been chiefly of a formative character : drifts or levels having been driven in the seam on each side of the shaft but no regular working places being yet formed. At present all work is suspended and the mine is filled with water.

The expenditure according to the return is

Shafts	\$3,424 75
Adits and Levels	1,709 87
Drains.....	52 00
Prospecting	178 00
Total.....	<u>\$5,364 62</u>

On the East side of East river, little progress has been made towards a more effective working of the mines already opened. On the McBean and McKay area a small quantity of coal has been worked but no means of extension have been provided, nor any preparation made for connecting the mine with any place of shipment.

The returns give an expenditure on the respective areas as follows :

	McKay.	McBean.
Shafts	\$658 00.....	\$29 70
Drains.....	28 50.....	—
Machinery	36 00.....	—
Houses	—	28 00
Prospecting	38 70.....	113 60
Total.....	\$761 20	\$171 30

The only area in this district on which any new work has been begun is that adjoining the McBean area, and now owned by the Pictou Mining Company. A shaft is in course of sinking to the seams proved by Mr. Kirby, one of which has been passed through, and the other is expected to be reached at a depth of about 180 feet ; the shaft being now upwards of 120 feet. A small engine has been erected for hoisting and pumping; and a branch line to join the Nova Scotia Railway has been surveyed, and other preparations are being made to put the Colliery into working order next year.

There has been an expenditure during the year on

Shafts	\$3,798 20
Drains, &c	500 00
Machinery	3,120 00
Houses	2,045 00
Prospecting	1,037 01
Total	\$10,500 21

At Sutherlands' river explorations were discontinued early in the year, and have not since been resumed. The Merigomish Company have become the owners of that part of the areas held by Mr. Kirby, on which he discovered the seam corresponding in position and other respects, with that opened by the Montreal and Pictou Company. Nothing further has however been done towards an effective mining of it.

In connection with the mining operations in Nova Scotia proper, notice of the recent discovery of coal near Antigonish must not be

omitted. Messrs. McKinnon and Chisholm have for some time been exploring in that locality, and their efforts have at last been rewarded by the finding of some seams of coal varying from 2 to 9 feet in thickness. These have in a few places been drifted into a short distance, but no opening of a character to fairly test the quality and size of the seams, has yet been made. This coal field is an interesting addition to those already known, and its developement will be attended with much interest.

CAPE BRETON.

The general depression in the coal trade has not been without its effect in Cape Breton, as well as as in Nova Scotia; and the record of mining operations is of a similar barren and limited character.

In Inverness County the only Colliery opened is still the

PORT HOOD,

and although the produce of coal at this Colliery during the year, has exceeded that of last year, the operations are still of a limited extent. The slope and levels have been extended in the ordinary course of working; in other respects there is no change in the mine. An adit has however, been driven from the shore for the purpose of draining the mine, which it will effect to the extent of about 180 yards from the crop.

The expenditure is returned as follows :

Slope	\$1,490 66
Adits and Levels	749 00
Machinery	840 88
Houses	56 00
Wharf	1,860 00
Total	<u>\$4,996 54</u>

No other mining operations of any importance have been begun or carried on in the County of Inverness. At Mabou and Broad Cove no further progress has been made in opening the seams; and at Chimney Corner 50 tons of Coal only have been worked out of the seam opened last year, and an expenditure is returned on

Adits and Levels	\$ 48 00
Drains, &c.	398 00
Total	<u>\$446 00</u>

At

NEW CAMPBELLTOWN

in Victoria County operations have been nearly altogether confined to the vertical seams, the workings in which have been in the Western levels only. The long wall system of working has been tried in these seams, and has so far been found to be adaptable. In the other seam worked last year operations were suspended early in the year, and it has not been worked since.

The following is the expenditure given in the returns

Shafts	\$ 60 00
Drains, &c.....	2800 00
Prospecting	446 80
Total.....	<u>\$3306 80</u>

The adjoining Colliery to the preceding has hitherto been the Matheson Colliery. During the year however, an opening has been made by W. Ross, Esq., of a seam on the Northern shore of Boularderie Island. The operations consist at present of a drift or slope from the crop, which has been driven a few yards in the seam.

At the

LITTLE BRAS D'OR

or Matheson Mine there has been an increase in the quantity of coal worked, but the operations are still on a very small scale. An additional adit has been driven a little to the dip of the one hitherto used as an outlet for the coal, and a few working places have been turned out of it, but in other respects the mine is very little extended.

The expenditure has been on

Adits and Levels.....	\$420 00
Drains, &c.....	40 00
Total.....	<u>\$460 00</u>

COLLINS.

The Collins Mine has continued unworked during the greater part of the year; operations having only been resumed in July last. They are still on so small a scale that the extension of the workings is inconsiderable. No new work has been begun.

SYDNEY.

It will be observed that the produce of this large and important Colliery falls very much short of that of last year. Notwithstanding this, however, the operations have been of an extensive character. In the early part of the year the workings of the Main Seam were driven under the sea at Lloyd's Cove ; and this district of the mine has been regularly worked since, in the same manner as hitherto practised, with the exception of an enlargement in the size of the pillars. No increase of water has been met with, nor is there any change of importance. The other working districts of the mine are being extended in the ordinary course of the operations, and exhibit nothing that requires particular remark. No pillars have yet been worked.

An important addition to the productive powers of this Colliery is at present being made. About 1500 yards to the dip of the present working shaft a winning has been begun on a precisely similar scale to that at the Albion Mines. Two circular shafts are being sunk, one of which is intended for a pumping shaft, and the other for a working or hoisting shaft; the diameter of the former is 11 feet, and of the latter 13 feet. They are now about 200 feet in depth, and are expected to reach the seam at a depth of upwards of 600 feet. The engines to be applied to these shafts are to be alike in every respect to those that are being erected at the Albion Mines. Some time must necessarily elapse before this winning can be completed, although the work is being carried on with much vigor. When finished these shafts will open a large tract of coal; and by means of a powerful pumping engine that is to be erected, it is hoped that the water in the mine will be sufficiently under control to allow the pillars to be worked.

The operations at Cox Hill and Little Bras d'Or, and which were suspended at the former place until a steam engine was erected, have not been resumed; and at the latter place they have also been abandoned. The working of the Lloyd's Cove Seam was also discontinued in the early part of the year.

The Returns shew an expenditure as follows :

Shafts	\$6,732 77
Adits and Levels	1,974 10
Drains, &c	7,326 57
Machinery	4,145 66
Houses	1,159 69

Total\$21,338 79

INGRAHAM.

At this Colliery only 35 tons of Coal have been worked during the year, and for several months nothing has been done in the mine.

An expenditure is returned on

Shafts	\$200 00
Drains, &c	60 00
Total	<u>\$260 00</u>

Near the Low Point, on the southern shore of Spanish River, and opposite to the Sydney Mines, an opening has been made by Messrs. Ross and Company. This was begun early in the year, and consists of a slope started a short distance from the cliff, and driven in the seam, the thickness of which is 6 feet 3 inches, with a dip to the north of about 39° . The coal to be worked by this slope being under the sea, this is the first operation of the kind in connection with areas so situated. The slope has been put down upwards of 200 feet, and a level has been driven a short distance to the east, out of which a working place has been turned. A small engine is used to hoist and pump.

Much caution will be required in commencing operations in areas of this kind, as a hasty working of the seam, by which an insufficient thickness of strata is left overhead, or an inadequate scale of pillarage, may be attended with disastrous results.

In the present case I have requested that the slope be driven much further to the dip before any attempt is made to work the seam.

A shipping wharf, 300 feet in length and 23 feet broad, has been erected near the South Bar; and being on the inside of the Bar, it is a safe and excellent place for loading vessels. A railway to connect it with the mine is projected, but nothing has yet been done towards its formation.

An expenditure is returned on

Slope	\$2,483 63
Adits and Levels	300 00
Drains, Wharf, &c	2,701 55
Machinery	1,100 00
Houses	400 00
Prospecting	20 00
Total	<u>\$7,005 18</u>

LINGAN.

The operations in this Colliery have been of the ordinary character. The principal extension of the workings has been to the east, in which direction they have been driven into the sea area held by the Association. No alteration of importance has occurred in the seam nor in the mode of working. An additional opening in this Lingan tract has recently been made at the Barasois district, to the north of Lingan Mine, about $2\frac{1}{4}$ miles. A seam of coal, 6 feet in thickness, has been entered by a slope from the crop. This slope has been driven upwards of 360 yards to the dip, into the area under the sea held here by the Association. No workings have yet been turned out of the slope. The coal is at present hauled by horse-gin, but preparations are being made for the erection of a steam engine to be applied to haul and pump.

The expenditure is stated in the Returns as follows :

Shafts	\$ 200 00
Adits and Levels	4359 15
Drains, &c	2345 50
Houses	11171 51
Wharf	1386 60
Dredging	1200 00
Total	<hr/> \$20662 76

INTERNATIONAL.

The International Colliery is, this year, one of the few in which the quantity of coal raised exceeds that of last year—the increase being nearly 2600 tons. In the mine the workings have been correspondingly extended, chiefly in a southerly direction, and do not present any feature of novelty requiring remark. The operations are conducted in the same manner as last year—no change whatever having been made either in the surface or shipping arrangements. An expenditure is returned as follows :

Drains, &c	\$ 76 50
Machinery	450 00
Houses	30 00
Total	<hr/> \$556 50

CALEDONIA.

Considerable progress has been made at this Colliery during the year. Nearly all the arrangements in connection with working and raising the coal have been completed. The seam has been opened by levels on each side of the shaft, and working places formed on the bord and pillar principle. The working shaft is fitted up with slides and cages, and the surface arrangements generally are laid out with a view to extensive operations. The railway to the harbor at Big Glace Bay has also been completed.

It will be observed that upwards of 8000 tons of coal have been worked; no shipments have, however, yet been made owing to the non-completion of the harbor, although much has been done towards this end. Extensive and substantial piers have been built to form the entrance, and the deepening of the inner portion of the harbor is now being proceeded with. It is confidently expected that several shipping places will be in readiness on the opening of the shipping season.

The Returns shew an expenditure on

Shafts	\$1824 32
Drains, &c	204 00
Machinery	19411 42
Houses	2936 67
Railway	7089 89
Total	<hr/> \$31466 30

LITTLE GLACE BAY.

The principal operations in this Colliery have been in connection with the new shaft sunk last year, and in the Harbor Pit. The workings in the former have been connected with those from the slope, and have also been extended on each side of the shaft by levels in the usual way. The coal is hoisted by a small engine erected temporarily for this purpose, and another engine is used exclusively for pumping. The railway has been extended from the slope to this shaft; the general arrangements are yet, however, incomplete. Little has been done in the slope workings, and their position is in consequence not much altered. In the Harbor Pit the workings have been extended in a northerly direction, and do not exhibit any change of any moment. The only new work has been a

slope which has been driven out to the crop for a travelling road, and for other purposes. The following expenditure is given in the Returns :

Shafts	\$ 633 38
Adits and Levels	4079 42
Drains, &c	17514 85
Machinery	1683 00
Houses	1838 87
Total	<u>\$25749 52</u>

CLYDE.

This Colliery has been nearly altogether inoperative during the whole of the year, only 20 tons of coal having been raised.

At Schooner Pond also no coal has been worked nor any operation in connection with the mine been attempted.

BLOCK HOUSE.

Although the quantity of coal raised at this Colliery is much less than last year, a considerable extension of the powers of production has been completed during the year. Another slope has been made in connection with the deep workings, and an independant outlet for a large tract of coal thus provided. The coal is hauled up this slope by an engine erected near the top of the old slope, on which this engine has also been successfully applied. In the workings there is no change of any importance; they are conducted on the same principle as heretofore, and no pillars have yet been worked. Arrangements are, however, about to be made for a commencement in one of the districts of the mine.

The expenditure is stated to be on

Drains, &c	\$200 00
Machinery	500 00
Houses	350 00
Wharf	<u>2000 00</u>
Total	\$3050 00

GOWRIE.

The Gowrie Colliery is one of those at which the quantity of coal raised is in excess of last year. The workings have been nearly altogether in the parts of the mine opened by the new shaft ; the

levels having been extended on each side of it, and the principal working places driven between them and the old upper levels. The old shaft is not now used, and no coal has for some time been brought out of the workings driven from it. The operations during the year have been of the ordinary character, and offer no peculiarity worth noting.

The breakwater for the protection of the shipping place suffered a good deal of damage last winter; it has, however, been repaired, and is now in fair condition.

The expenditure is stated to be on

Shafts	\$ 50 00
Drains, &c.....	480 00
Adits and Levels	240 00
Machinery.....	610 00
Houses	1117 00
Breakwater.....	13097 00
Total	<hr/> \$15594 00

Explorations have recently been begun on the area adjoining the Gowrie Mine, on the south-west, by the New York and Cape Breton Coal Company. Trial pits have been put down along the crop of the McAulay Seam with a view to determine the best place for commencing a winning. A line of railway has also been run to the shore at Cow Bay, near the Gowrie Wharf. Operations are, however, at present suspended.

Neither at Mira Bay nor South Head Collieries has there been any coal raised in the past year. At the former mine nothing has been done for upwards of two years; at the latter, the place of shipment was carried away during a gale last winter, and it was deemed advisable to provide a more suitable place before further opening the mine. A small cove lying to the west of the Colliery has been selected for this purpose, and a railway to connect it with the mine, is in course of construction.

RICHMOND.

No coal has been raised at this mine during the year, the operations having been principally a continuation of the new work begun last year. The shaft has been sunk to a depth of 200 feet and out of it, at that depth, a tunnel or stone drift, has been driven which

cuts the seam at a distance of 162 feet from the shaft. The coal is thus reached at a much lower depth than the old workings, and a considerable tract can be opened. Levels have been driven on each side of the drift, and working places prepared; but further operations have for the present ceased.

The expenditure is returned as follows:

Shafts	\$2009 55
Adits and Levels.....	2160 77
Drains, &c.....	883 97
Machinery.....	317 91
Total	<u>\$5372 20</u>

Nothing has been done at the Sea Coal Bay Colliery during the year; it has now been totally inactive upwards of two years.

GOLD MINES.

Whilst the Gold Mines in most of the districts have been prosecuted with much vigor, yet in some the operations have been of a somewhat irregular character. In certain localities they have been resumed after an interval of inactivity of some duration, and in others they have almost ceased.

THE OVENS

is one of those districts which have been allowed to fall into an almost unrecognized condition in a gold-producing aspect. The operations during the year have certainly not been of a character to attract attention; indeed they have only recently been resumed by Messrs. Fairfield and others, who are sinking a shaft on the Bent lode, and are preparing to open others.

Mr. McCulloch ceased working early in the year, and his mine is in much the same position as it was at the end of last year.

RENFREW.

The operations in this district have been conducted with the same steadiness which has prevailed for some time. On the No. 1

lode, the Ophir Company have sunk all their shafts deeper, the deepest being now 160 feet. With the exception of the easternmost, the depth of which is 45 feet—all these shafts have been worked; the stoping from each being regularly carried on. On the No. 5, or deep shaft, a steam engine with hoisting and pumping machinery, has recently been erected. On the No. 2, or South lode, a similar extension has taken place, the shafts being about the same depth as those on No. 1. South of the No. 2 lode, two shafts have been sunk by the same company on a lode the thickness of which is 5 inches; one of these is 95 feet deep, and the other 80 feet. No tunnelling or stoping has yet been begun. The Hartford Company, formerly the New York and Renfrew Company, have also mined the No. 1 lode on the west of the Ophir Company, and their shafts are now 100 to 130 feet deep, and the lode has been stoped between them nearly to the surface. On the Free Claim, the same company have continued to mine the lodes opened last year, the shafts having been sunk deeper on each, and the stoping regularly carried on.

The McLeod lode, lying to the north of No. 1 lode, has been worked by Messrs. Allen and McClure. The former has four shafts on it, the deepest of which is 140 feet; the lode has been stoped between them to the depth of 100 feet in this shaft.

Mr. McClure has two shafts adjoining Mr. Allen on the east, one being 86 feet deep, and the west one 102 feet, and 100 feet apart. The lode has been stoped within 20 feet of the surface between these shafts, and out of the west shaft at a depth of 75 feet, a tunnel has been driven 30 feet to the west. About a quarter of a mile to the south of the lodes worked by the Ophir Company, a lode has been opened by Mr. Andrews, who has sunk a shaft on it, but has not mined to any extent.

OLDHAM.

In the Oldham district the principal mining has been by the Boston and Oldham Company and Mr. Shaffer. By the former their No. 2 shaft has been sunk 57 feet further, and the stoping correspondingly extended. In June last operations were suspended, and have remained so since.

The Britannia lode has been mined to a small extent by Mr. Shaffer, who has also continued to work the barrel quartz formation.

WAVERLEY.

In this district the principal mining has been by Messrs. Burkner, DeWolf and Company, and the Boston and Nova Scotia Company. The Tudor lode has been worked by the two first named parties, but not so extensively as formerly. Messrs. DeWolf and Company have connected one of their shafts on this lode with the North or Brodie load, by a tunnel, so that the water made in that lode will be drawn at it; and are also about to sink the shaft 50 feet further. On the Brodie lode the operations have been of the ordinary character. The South or Nigger lode is being mined by Mr. Burkner, who has sunk additional shafts, and is extending his operations on it. The barrel quartz formation has also been, and is still mined by these two parties. On the Taylor lode little has been done during the year. The Boston and Nova Scotia Company's operations have been on the same lode as they worked last year; the shafts have been sunk deeper, one of them being now 300 feet, and this they purpose putting down other 50 feet.

MONTAGU.

The Union Company only have been in operation at Montagu, and with the exception of the opening of a lode lying to the south of the one worked last year, the principal mining has been upon it. The shaft has been sunk to the depth of 85 feet, and the lode stoped to that depth for a distance of 90 feet to the west, and 50 feet to the east. The open trench work has also been extended further west, and to a depth of 30 feet. Another shaft has been sunk at the west end of the trench the same depth, and is being continued further. An engine is in course of erection at the east shaft, with machinery for hoisting and pumping. On the South or Werner Lode, the thickness of which is 4 inches, two shafts, 60 feet apart, have been sunk; the depth of the west one being 45 feet, and of the east one 30 feet. The lode has been stoped on each side of the east shaft, for a short distance.

TANGIER.

In this district the principal mining has been at Old Tangier. The working of the Nigger and Leary lodes by Messrs. Barton & Company

having been discontinued early in the year, and not since resumed. On Strawberry Hill Mr. Forest has worked one of the lodes to a small extent.

At Old Tangier Messrs. Adams & Co have continued to mine the Furnace lode ; another shaft has been sunk to the West of the first one and the lode has been stoped West from it 200 feet, to a depth of about 20 feet. About 70 feet to the North of the Furnace lode, a lode 9 inches thick has been opened by 5 shafts varying in depth from 20 to 40 feet. Between these shafts the lode has been stoped nearly to the surface and over an extent of 300 feet. Further North about 30 feet, 5 shafts have also been sunk on a lode the thickness of which is 6 inches. These shafts are from 20 to 30 feet deep, and out of them the lode has been stoped a similar extent. Between these two lodes an open trench has been cut a distance of 200 feet, on a lode 2 inches thick. Operations are at present confined to this lode and the one next the Furnace lode.

SHERBROOKE.

Mining is pursued in this district with unabated vigor. Nearly all the lodes that were being mined last year have been worked. On the Palmerston lodes operations have been carried on by the Dominion and the Metropolitan Companies, and by Messrs. McClure & Co. South of these lodes two shafts have been sunk on the Hewitt lode by the Dominion Company to the depth of 80 feet and 60 feet respectively. On the North of the No. 2 Palmerston lode a shaft has been sunk by Messrs. McClure & Co. 45 feet to another lode and others have also been cut through in a cross-cut out of No. 2 lode. On the Wellington Company's claims the shafts have been sunk deeper on the Cumminger lodes and the stoping carried on in connection with them. Messrs. Hayden and Derby have continued to work the lode opened on the South of the Blue lode. Shafts have also been sunk by the New York and Sherbrooke Company, from 60 to 70 feet, on a lode about 150 feet to the North of the old Hayden lode. On the same lode and farther West, a shaft is being sunk by Messrs. Hayden and Derby. All the operations are carried on in the ordinary manner.

WINE HARBOUR.

Into this district, in which operations have for some time been partially suspended, a renewed vigor has been imparted by a change of ownership of some of the mines. In the principal of these, formerly the Caledonia and Glenelg Companies, the shafts are being sunk deeper and preparations being made for a more active and extensive working. The Eldorado Company's operations are still confined to driving the tunnel begun last year. It is now about 300 feet in length. At the Barasois, the Orient Company have two shafts, one 90 feet and the other 100 feet deep, on the Rankey lode, opened last year. Between these shafts a tunnel has been driven and the lode stoped. About 50 feet to the North of this lode a shaft is being sunk on another lode. West of the Orient Company Messrs Capel and Pearce are also sinking two shafts on the Rankey lode, and other preparations are being made for an active mining of the various lodes.

STORMONT.

There has not been much progress during the year in this locality. The Mulgrave lode has been worked by Messrs. Gallihar & Co, but not to any extent. On the Victoria lode little has also been done and the mine is now filled with water. Arrangements are however being made for putting these mines into working order, and for a more active prosecution of mining in this district.

LAWRENCETOWN.

At Lawrencetown there has not been much regular mining until recently. The lodes formerly worked by the Messrs. Waddilow are now being mined by Messrs. Townsend & Co., but the operations are yet of limited extent. To the East of their shafts several lodes have been opened by Mr. Werner. On one, the thickness of which is 12 ins. a shaft has been sunk 54 feet and a tunnel is in course of driving. Shafts have also been sunk on other lodes on which mining operations are being actively carried on. Two crushing mills have also been erected one by Mr. Werner and the other by Messrs. Townsend & Co. On the lodes worked last year by Mr. Strange operations ceased during the year and have not been resumed. Other lodes have, however, been opened by him on the East side of the

river, and to the West of the Townsend and Co's mines, on which operations are being carried on.

To the preceding well-known gold districts must now be added that of

MOUNT UNIACKE,

The operations in which are assuming an important character. Several of the mines were begun towards the end of last year and most of them have been worked during the past year. Two shafts have been sunk by Mr. Mitchell on a lode the thickness of which is 3 inches, to the depths of 50 feet and 40 feet respectively; the distance apart being 35 feet, and the lode has been stoped between them. On another lode, to the West of Mr. Mitchell's mine, Mr. Burkner has sunk two shafts which are now 25 feet deep and stoping has been commenced between them. Adjoining Mr. Burkner on the West, a shaft has been sunk by Mr. Doull on the same lode to a depth of 50 feet, and the lode stoped on each side of it. On the Logan lode, the thickness of which is about 10 inches, the Montreal Company have two shafts, one of which is 55 feet deep, and out of it the lode has been stoped 30 feet to the East and 40 feet to the West, to within 10 feet of the surface. The Mount Uniacke Company have also three shafts on a lode 12 inches thick, to the East of the Logan lode. The central shaft is now 102 feet deep, the others are 60 feet and 70 feet respectively, and the lode has been stoped from these depths to the middle shaft, to within about 10 feet of the surface. About 80 feet to the South of this lode the same Company have sunk a shaft 20 feet on another lode, also 12 inches thick, and have tunnelled a short distance on each side; and further South about 20 feet they have also a shaft 40 feet deep on a lode from 10 to 12 inches thick. This lode has been worked on each side of the shaft by open trench, to a depth of 30 feet. Considerably to the West of these operations a lode has been opened by Messrs Hall and McAllister. This lode is 10 inches thick, and on it are two shafts, one of which is 50 feet deep and the other 35 feet, the distance between being about 50 feet. The lode is being stoped between the shafts, 10 feet being left next the surface, and a tunnel has been driven to the East 16 feet from the East shaft. Further West, the West Lake Company are working a lode or rather an aggregation of lodes, the width being about 9 feet. A shaft has been

sunk 26 feet but at present a portion of the lode is being worked near the surface by a tunnel which is being driven to the East from a depth of 9 feet in the shaft.

In other localities, viz : Stewiacke, Musquodoboit, and Gold River near Chester, operations have been begun during the year, which are yet however chiefly of a prospective character. At the latter place, lodes varying from 3 to 6 inches thick have been opened by Colonel Briscoe, by a shaft, the depth of which is 37 feet, and an open trench is being driven from the edge of the river to cut the shaft. A crushing mill is also in course of erection.

ACCIDENTS.

I regret to have to report an increase in the number of accidents this year notwithstanding the mining operations have, in one branch at least, been much reduced in extent. Several of them it will be observed however are not such as are incidental to operations conducted on a large scale only, but are such as are liable to occur whenever either ignorance or recklessness is not guided or restrained by superior judgment.

During the year there have been 25 accidents resulting in the death of 19 persons. On 6 occasions have injuries been received from the premature explosion of the cartridge used in blasting, causing the death of 4 men ; there have been 6 explosions of gas by which 4 lives were lost ; 8 persons, 5 of whom died, have been injured by falls of stone and coal ; and the death of 6 men has occurred from other causes named in the following statement.

No.	Date.	Name.	Name of Mine.	Cause.	Result.
	1866.				
1	October 3	David McCool...	Wine Harb.	Explosion of powder.	Died.
	do.	Fredk. McEwen.	do.	do.	Recovered.
2	9	John Neal.....	Sydney...	Explosion of gas....	do.
3	11	John McGowan..	do.	do.	do.
	do.	Alex. McGowan..	do.	do.	do.
4	do.	— Thomas.....	Lawrenct'n	Fall of earth....	do.
	do.	— Bowers.....	do.	do.	Died.
5	do.	John Wilmot...	Ovens....	Explosion of powder.	Recovered.
	do.	Samuel Couch...	do.	do.	do.
6	Nov. 9	Donald McMullen	Sydney...	Fall of stone.....	do.
7	15	Allen Shaw.....	Waverly..	Explosion of powder	Died.
	do.	Ang's Livingstone	do.	do.	do.
8	28	Jno. McGilchrist.	Albion...	Crush'd by machin'y.	do.
9	Dec. 10	Jno. A. Mount. .	Waverley .	Fall down shaft	do.
10	20	Alex. McLean...	Albion....	Explosion of gas....	do.
11	27	William Kelly...	Renfrew...	Fall of tub down sh'ft	do.
	1867.				
12	January 3	James Baxter...	M. Uniacke	Explosion of powder.	do.
13	Feb. 15	Philip Brown...	Sydney...	Explosion of gas....	Recovered.
14	28	Hector McKenzie	Montreal & Pictou..	Fall of stone.....	Died.
15	March 4	Robert Harvey..	Albion....	Suffocation	do.
16	17	Patrick Campbell	Lingan...	Explosion of gas....	do.
	do.	John Fielding...	do.	do.	Recovered.
17	26	Jno. Livingstone.	do.	do.	do.
	do.	Morris White...	do.	do.	Died.
18	April 13	Andrew Porbes..	Albion....	do.	do.
19	27	Rodk. McNiel...	Sydney...	Fall of stone.....	Recovered.
20	May 3	Jno. Hallow	Waverley .	do.	Died.
21	July 9	Hugh McPherson	Caledonia .	Explosion of powder.	Recovered.
	do.	Peter Walker. .	do.	do.	do.
22	August 1	James Shea.....	Port Hood.	Crush'd by machin'y.	Died.
23	26	Robt. McLeod...	Montreal & Pictou..	Explosion of powder.	Recovered.
24	Sept. 12	Jno. Sullivan....	Sydney...	Crushed in mine....	Died.
25	20	Jno. Timmons...	Collins....	Fall of coal.....	do.
	do.	Peter Timmons..	do.	do.	do.

N. 1. McCool and McEwen were in the employ of the Eldorado Company at Wine Harbour, and were preparing to blast a portion of rock, and had begun to put in the stemming when the cartridge exploded, and they were so severely injured that McCool only lived twelve hours after it occurred.

No. 2. This was an explosion of gas in the Queen pit, Sydney Mines, by which John Neal one of the deputy overmen was burnt. It occurred in a headway the working of which had been discontinued. The place had been examined by the overman two days

before the explosion, and it was then clear of gas ; Neal having no apprehension of any being present on the day he went into it, took a naked light, and thus caused the explosion.

No. 3. This accident occurred at the same place as the preceding one, under the following circumstances. A pair of headways were being driven to the rise, and the ordinary holings made between them; the faces of each headway were the usual pillar length from the last holing, and another holing was nearly completed when the places were stopped, a short time prior to the accident to Neal. The McGowans were sent to complete the holing; the thickness of coal between each headway being only 3 feet. The place had been examined by a deputy before the men went to work, and there was then no gas, and they were therefore told they need not take safety lamps; as soon however as they had made a small opening some gas came through and ignited at their lights. The sudden appearance of the gas is attributed to a change in the course of the air in consequence of a door being left open, by which the current was diverted; but by whom this act of great carelessness had been committed, was not discovered.

No. 4. The death of Bowers was caused by the fall of a mass of rock near which he and Thomas were working. They were engaged in mining the lode in an open cutting about 10 feet deep, and whilst so employed a portion of the overhanging rock and soil slipped from the side, and both men were buried beneath it. Thomas was got out without being seriously injured, but Bower on being extricated was quite dead. No timber had been fixed to protect them from such a casualty, and with ordinary care the accident would not have happened.

No. 5. This accident was similar in character to that at Wine Harbour. Wilmot and Couch were working in Mr. McCulloch's mine, and were preparing a blast, when the charge exploded as they were beating the stemming.

No. 6. In this case McMullin was returning from his work up the engine plane, and hearing the tubs coming, he stepped into an open portion of one of the old workings, and whilst standing till the train had passed, a portion of the roof fell and struck him on the back.

No. 7. The death of these two men, who were in the employ of

the Lake Major Company, was caused by the explosion of the cartridge whilst preparing for a blast, under precisely similar circumstances to those already mentioned.

No. 8. McGilchrist was an engineman in the employ of the General Mining Association at the Albion Mines, and had charge of a small engine used for drawing coal up a slope. It is supposed that he had been standing on one of the horns of the drum, to get the engine over the centre, and having got entangled, when the Engine started, one of the horns entered his chest, and caused immediate death.

No. 9. This accident, which occurred in the Boston and Nova Scotia Company's mines at Waverley, was caused by a turn of the gin rope having slipped off the drum, whilst a defective part of the rope was being taken out, without being observed; and when Mount and his mate, who were standing on the bucket, had descended a short distance in the shaft, the bucket suddenly fell the length of the loose rope and Mount was jerked off and precipitated to the bottom of the shaft, a depth of about 170 feet. The Gin drums are usually provided with horns or pins on the low part to prevent the rope slipping off in case of slackness; and I am informed that there was no defect in the drum in this respect; there must have been however a carelessness of observation on the part of those about the gin, when the rope could be hanging as it would be, and not be detected before starting. I would further remark, that the practice of standing *on* and not *in* a tub is highly reprehensible.

No. 10. McLean was employed in the Albion Mines, and his duty was to drive a fan for the purpose of ventilating a working place in which gas was made. Being rather late in going to his work, and the place not having been worked through the night, the workmen had commenced the fan themselves. McLean in going to his work met the gas which fired at his naked light.

No. 11. This accident occurred in one of the shafts of the New York and Renfrew Company. The tub had stuck in descending, and become detached from the rope. Warning was given by the man at the top of the shaft, as soon as he saw the slack rope, and it is supposed that Kelly, who was engaged near the bottom, had attempted to leap across the shaft, and had been struck by the falling tub, which killed him on the spot.

The hook used in this case was of the open sort ; the bow of the tub resting in it, and the only security being a few strands of rope, tied across the mouth of the hook. This mode of attaching the bucket to the hook is very unsafe.

No. 12. This is another of those accidents which have occurred whilst charging a hole for blasting. Baxter was engaged stemming, when the cartridge exploded, and he was so severely injured that death ensued shortly after.

No. 13. In this case the explosion was occasioned by the recklessness of the sufferer. He was employed to make a communication between two bords, and as a fall of the roof had occurred in the place in which he usually worked, he was sent into the other bord, with instructions not to go into his own place till a holding was made and it was ventilated. Notwithstanding these instructions and the warning of the deputy overman, only a short time before the explosion, he took an open lamp into his bord and ignited the gas.

No. 14. McKenzie was engaged with another man in the Montreal and Pictou Colliery, taking down a portion of the roof, to make the necessary room to set the timber. Having some difficulty in breaking off a large projecting piece, he fired a shot near the floor to loosen it, and began to take out the shattered Coal, when a mass of the stone suddenly gave way and falling upon him, crushed him so severely as to cause instant death.

No. 15. Robert Harvey was an overman in the employ of the General Mining Association at the Albion Mines. His death occurred under the following circumstances. On the 14th February the coal was set on fire in the Crushed Mines, by the ignition of a feeder of gas in one of the bords, in which the Coal was being worked with gunpowder. Several attempts were made to extinguish it but without success ; the only resource was to fill the workings with water. After the water had been allowed to flow into the pit several days, it became necessary to examine certain parts of the mine by which it might communicate with the Dalhousie pit workings, and Harvey and another man were instructed to make such examination. For this purpose, Harvey climbed up a ladder into one of the upper workings in the seam, with his safety lamp, and finding it would not burn in consequence of the presence of gas, he ventured

in without it. After remaining a few minutes he returned and being dissatisfied with his inspection of the place, he again entered. His companion, after a short interval shouted to him and receiving no answer, he also entered the place and was able to proceed far enough to get hold of Harvey, whom he found prostrate, and to drag him within a few yards of the place of entry. Finding himself much affected by the gas, and his strength failing he was unable to get him out, and before he could procure assistance some time elapsed; and when the body was got out, life was extinct. The evidence at the inquest clearly proved that the unfortunate man was not told to go into the place and that there was no necessity for him to go there in the execution of the duty on which he was sent.

No. 16. The death of Campbell was caused by an explosion of gas in the Lingan Colliery. He and Fielding were sent to remove some water with buckets, and were warned against going into the part of the mine where the accident occurred; as gas was known to be there. In spite of this caution however, they went into the place with their naked lights, and ignited the gas.

No. 17. This accident also occurred at Lingan Colliery, Livingstone and White were working in different places; but in the same district of the mine. Livingstone's mate being absent he went to White and asked him to work with him; White agreed to do so, and on their way to Livingstone's place, instead of keeping the usual road they went through some of the workings, and got into a place in which there was some gas, and the explosion occurred.

No. 18. The circumstances in connection with this accident are somewhat peculiar. Forbes was employed as a sinker and had charge of a shift. After firing a shot, he descended the shaft in the bucket, with a light and when nearly at the bottom, an explosion of gas occurred, and he fell from the bucket. On examination it was found that the gas had issued from a fissure in the rock that had become exposed by the shot, and had accumulated sufficiently during the short time that elapsed between the firing of the shot and Forbes' going down, to produce the disastrous result. The injuries received by Forbes both from the burns and the fall were very slight, but he appears to have received so severe a shock to his nervous system, that he died a week after the occurrence.

No. 19. The injury to McNeil was caused by a fall of stone, whilst he was engaged cutting coal. He had observed it projecting,

but neglected to take it down or secure it with timber before commencing with the coal.

No. 20. The death of Hallow occurred under the following circumstances. He and four others were engaged, in the Lake Major Mines, at Waverly, cutting hitches in the wall sides, for the purpose of setting guides for the pump rod. Hallow and another man were employed on the foot wall, about 100 feet below the others, a staging being erected at each place. A portion of the rock of an angular shape was detached by the upper set of workmen and fell from the staging. Whether it struck Hallow and he then fell from the staging or in endeavouring to escape on warning being given, he missed his footing; or, whether he was precipitated from the stage by its tilting on being struck by the stone was not clearly ascertained; but he was found at a depth of 26 feet below the staging with his skull so severely fractured, that death speedily ensued.

No. 21. In this case the extreme recklessness which too often prevails among miners is strongly exemplified. McPherson and Walker were preparing to blast a portion of the seam in the Caledonia Colliery, and as the hole in which the shot was to be placed was damp, they were about to fix a piece of iron tubing to the cartridge to protect it from the wet; and were holding it over the flame of their lamp to soften the pitch, when the cartridge exploded, and caused also the explosion of a can containing about 4 pounds of powder, which was by their side. McPherson was severely burnt and Walker escaped with slight injury; the piece of tubing fortunately missing each of them.

No. 22. This accident occurred at the Port Hood Colliery. Shea with others was engaged laying way in the mine, and left them to go up the slope. He did not return and on leaving their work, they found him lying dead near the pump at the bottom of the slope, with his head severely crushed. It is supposed in the absence of any other apparent cause of death, that he had stopped to look at the pump, which is of unusual construction and was not in motion at the time; and that the engine had been started whilst he was looking into the barrel. The lever to which the arm is attached, which works the bucket, moves to within a few inches of a stout framing on which the pump is fixed, and there is no doubt that his head was crushed in the manner indicated.

No. 23. This is another instance of the carelessness with which operations requiring much caution, are too often performed. McLeod

was preparing a shot in the Montreal and Pictou Mine, and had got the cartridge, of gun cotton, so far into the hole, which from some mismanagement was too small for the size of the cartridge. Thinking he could drive it into the hole, he put his rammer or tamping rod against the cartridge, and requested his comrade to strike it, when it immediately exploded. The manager informed me that instructions for the use of the gun cotton were placed near the pit bank, and that McLeod was acquainted with them.

No. 24. John Sullivan was employed in the Sydney Mine as a driver. The horse he was driving, from some cause ran off and upset the tub in which Sullivan was riding. Being unable to extricate himself he was unfortunately jammed between the tub and the timbers by the way side and was found in that position. Although no bones were broken, he appears to have suffered internal injuries which caused his death.

No. 25. This accident, which resulted in the death of the brothers Timmons, occurred in the following manner. They were working in a bord in the Collins Mine, the width of the place being about 8 feet. They had undermined the coal and sheared one side in the usual way ; they had afterwards attempted to extend the undermining, and whilst working beneath the upper portion of the seam, the mass broke off, and falling upon them caused the instant death of one, and so crushed the other that he died a few hours after being extricated. An examination of the place after the removal of the coal shewed that there was a lype or slip, which caused the mass of coal on being partly loosed to break away.

Respecting the manner in which these accidents have happened, I may remark that the six that occurred whilst preparing a blast were exactly alike in circumstances.

Some experience is required to conduct the operation of blasting coal or stone, and it is to be feared that the want of it as much as, or more than recklessness leads in many cases to these disastrous results. In no part of the operation is greater care required, than in beating the stemming, especially in a hole in stone, as the end of the tamping rod coming sharply into contact with the rock, may at any time produce a spark and ignite the cartridge. If the rod, or the end of it, were of copper instead of iron or steel, the risk from this cause would be obviated ; and it is so simple a remedy that its non-adoption is inexcusable. The explosions caused by firing the gas in the mines,

appear in some cases to have originated in a recklessness of consequences that cannot be too severely censured. It should be borne in mind by every person in a mine in which gas is produced that it is not merely the risk he runs himself, by a disobedience of orders, though that should certainly deter him, but that he may be instrumental in causing the loss of the lives of others. At the same time no means of warning should be neglected by those in charge of the mine. In furtherance of this object I have recommended that boards with the word "danger" printed on them, be placed wherever there is gas or it is suspected.

There is a system that prevails to a great extent, of allowing the miner to do nearly everything himself that is required in the course of his operations, respecting which I would also remark, that although his own safety should be a sufficient inducement for the exercise of care in working, yet it is well known that to save a little trouble, risk is very frequently run. The same control should at all times be exercised by those in charge of the mine, as is necessary when the miner performs only the operation of getting the mineral. The place of working should be carefully examined and the adoption of the necessary means of security be insisted on, whether the parties working are under contract or not.

I have the honor to be

Your obedient servant,

JOHN RUTHERFORD,

Inspector of Mines.

The Honble. Robert Robertson,

Chief Commissioner of Mines and Public Works.

DECEMBER.

Stormont	2	38	3	2	1	65	00	.....	72	00	.....	17	10	1	01	00	.....	62	14 07
“ Isaac’s Harbour”	9	34	4	3	1	25	00	.....	25	00	.....	18	11	1	00	00	.....	19	00 14
Wine Harbour	12	77	4	4	.....	235	10	.....	235	10	.....	15	04	1	00	00	.....	687	01 18
Sherbrooke	10	23	4	2	2	80	00	.....	.....	.....	.....	2	.....	5	10	.....	.....	.....	.....
Tongue	1	12	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montagu	1	197	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Waverley	7	43	1	5	2	808	00	.....	808	00	.....	08	12	.....	16	08	.....	343	19 00
Oldham	5	173	1	5	2	110	10	.....	110	10	.....	03	22	3	00	15	.....	158	02 07
Renfrew	10	173	1	5	2	775	00	.....	727	00	.....	1	08	1	18	09	.....	967	12 20
Uniake	2	24	1	1	.....	55	00	.....	24	17	.....	1	15	4	09	10	.....	42	07 09
Unproclaimed and other Districts	2	12	2	1	1	59	00	.....	41	00	.....	15	00	1	00	00	.....	31	06 21
Totals.....	60	639	39	29	10	2217	00	.....	2043	17	.....	1	02	5	10	00	.....	2312	04 17

	oz.	dwt.	grs.
Total for Quarter.....	7086	15	05
Corresponding Quarter for 1865.....	6944	06	05

JANUARY.

[illegible]

FEBRUARY.

Stormont	5	37	3	2	1	100	95	.....	.....	.....	16	05	2	10	.....	.....	80	15
" Isaac's Harbor "	2	10	4	3	1	100	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	395	12
Wine Harbor	12	109	4	4	4	200	15	.....	.....	.....	1	19	09	.....	.....	.....	8	15
Sherbrooke	3	7	4	2	2	50	4	.....	.....	.....	.....	18	.....	.....	.....	.....	17	12
Tangier	1	14	1	1	1	9	9	.....	.....	.....	1	19	03	.....	.....	.....	273	11
Montagu	4	174	5	4	1	951	941	.....	.....	.....	.....	05	19	1	19	03	70	17
Waverley	4	35	5	4	1	50	50	10	.....	.....	1	08	01	2	06	09	648	02
Oldham	4	142	5	3	2	460	425	.....	.....	.....	1	08	04	1	12	.....	54	16
Renfrew	7	23	1	1	..	57	54	.....	.....	.....	1	00	07	5	09	.....	.....	.....
Uniacke	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unproclaimed and other Districts	2	5	2	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	42	456	34	25	9	1980	1779	5	.....	.....	17	08	5	09	09	.....	1545	01

MARCH.

Stormont	5	35	2	2	1	55	25	05	.....	.....	2	05	.....	.....	.....	.....	56	10
" Isaac's Harbor "	2	12	4	3	1	50	.....	.....	.....	.....	.....	14	05	.....	.....	.....	127	01
Wine Harbor	12	115	4	4	2	700	177	18	.....	.....	.....	10	.....	.....	.....	.....	3	10
Sherbrooke	3	7	4	2	2	1	1	08	.....	.....	2	10	.....	.....	.....	.....	52	07
Tangier	1	14	1	1	1	21	21	.....	.....	2	09	20	.....	.....	.....	.....	425	18
Montagu	4	174	5	4	1	1126	1076	.....	.....	2	08	08	.....	.....	.....	.....	95	14
Waverley	4	36	6	5	1	53	53	10	.....	1	15	20	.....	.....	.....	.....	1387	07
Oldham	4	192	5	3	2	1350	966	.....	.....	1	08	16	.....	.....	.....	.....	39	15
Renfrew	10	23	1	1	.....	47	47	.....	.....	.....	.....	17	.....	.....	.....	.....	.....	.....
Uniacke	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unproclaimed and other Districts	2	5	2	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	14
Totals	45	613	34	26	8	3406	2368	1	.....	.....	.....	19	08	6	03	12	15	2198
																	14	18
																		07

Oz. Dwt. Grs.
 Total for Quarter.....5390 01 18
 Corresponding Quarter for 1866.....5018 08 16

AUGUST.

Stormont	5	42	2	2	50	110	10	1	06	00	2	11	8	148	10 18
"Isaac's Harbour"	7	60	4	3	800	214	.....	.....	05	23	26	18	8	68	17 02
Wine Harbour	14	94	4	4	717	717	.....	.....	17	16	3	18	18	1356	14 06
Sherbrooke	8	24	4	2	205	205	.....	.....	10	04	.....	10	04	104	10 00
Tangier	1	28	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montagu	6	145	5	4	1028	1028	.....	.....	07	22	.....	17	15	407	15 12
Waverley	10	58	5	4	73	73	3	.....	12	22	1	3	20	47	9 11
Oldham	10	290	5	3	737	737	10	.....	16	04	1	18	14	595	17
Renfrew	7	51	3	3	215	215	.....	.....	18	10	2	07	12	149	11 04
Uniacke	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unproclaimed and other Districts	6	12	2	1	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	69	744	35	27	8306	3800	3	.....	17	09	26	13	08	2868	05 05

SEPTEMBER.

Stormont	5	42	2	2	80	27	.....	.....	1	00	18	1	06	27	17 11
"Isaac's Harbour"	8	80	4	3	158	158	10	.....	09	.....	.....	8	17	71	00 19
Wine Harbour	12	92	5	5	664	664	.....	.....	1	05	12	2	02	849	00 06
Sherbrooke	3	24	4	2	157	157	.....	.....	16	00	02	2	01	125	06 00
Tangier	1	28	1	1	40	40	.....	.....	10	08	08	1	10	60	14 19
Montagu	6	144	5	4	592	592	.....	.....	05	20	16	16	07	172	17 22
Waverley	8	39	4	3	54	54	.....	.....	15	18	1	1	05	42	10
Oldham	11	192	5	3	729	729	.....	.....	17	14	3	08	01	643	05
Renfrew	7	51	3	3	347	347	.....	.....	15	11	14	10	.....	238	06
Uniacke	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unproclaimed and other Districts	6	12	2	1	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	67	704	35	27	2852	2768	10	.....	16	08	14	10	.....	2260	13 05

Oz. Dwt. Grs.
 Total for Quarter.....7583 9 13
 Corresponding Quarter for 1866.....7184 04 16

Quarter ended, December 31, 1866.....7086 15 05
 " " March, 31, 1867.....5410 01 18
 " " June, 30, 1867.....7502 19 21
 " " September, 30, 1867.....7583 9 13

27,583 6 9
 Corresponding for year 1866.....24,162 04

(B.)

STATEMENT SHEWING AVERAGE DAILY LABOR EMPLOYED, THE AMOUNT OF QUARTZ CRUSHED, THE YIELD OF GOLD PER TON OF QUARTZ, THE QUANTITIES OF GOLD FROM ALLUVIAL MINES, THE YIELD OF GOLD, THE MAXIMUM YIELD PER TON IN EACH DISTRICT, AND IN THE WHOLE PROVINCE, AND THE VALUE OF THE AVERAGE YIELD OF GOLD PER MAN EMPLOYED IN MINING, FOR TWELVE MONTHS ENDING SEPTEMBER 30, 1867.

DISTRICTS.	Average Men employed.	Crushing Mills employed Sep. 30, '67.	Steam Power.	Water Power.	Quartz, &c., Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total Yield of Gold.	Maximum Yield per Ton.	Average yield per Man for Twelve Months at \$18.50 per oz.
Stormont, "Isaac's Harbor"	45	2	2	....	1149 00 00	1 05 08	.....	1505 02 11	4 10 00	\$618 73
Wine Harbor	33	4	3	1	1667 00 00	08 13	.....	764 09 09	26 13 08	428 60
Sherbrooke	99	5	5	....	5809 00 00	1 09 08	.....	8522 08 11	11 13 05	1592 58
Tangier	19	4	2	2	486 00 00	16 07	20 06 00	395 16 10	4 06 16	385 50
Montagu	19	1	1	....	214 00 00	1 19 00	.....	417 13 21	2 09 20	406 60
Waverley	181	5	4	1	11289 00 00	07 07	.....	4184 18 17	1 12 18	422 63
Oldham	52	4	3	1	960 00 00	1 08 07	.....	1359 12 02	4 00 20	483 88
Renfrew	189	5	3	2	7770 00 00	1 04 04	.....	9401 02 10	3 08 01	895 30
Uniacke	30	3	3	....	1212 00 00	15 15	.....	947 01 17	14 10 00	584 00
Unproclaimed and other Districts	9	2	1	1	117 00 00	1 03 04	28 15 15	135 00 21	2 00 00	278 55
	676	35	27	8	30673 00 00	17 23	49 01 15	27583 06 09	26 13 08	\$765 00

(B 2.)

STATEMENT SHEWING THE NUMBER OF MEN EMPLOYED, QUARTZ CRUSHED, AND GOLD OBTAINED EACH MONTH IN EACH DISTRICT.

MONTH.	STORMONT.						WINE HARBOR.						SHERBROOKE.						TANGIER.						MONTAGUE.					
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.
October	45	244	..	91	01	20	35	179	..	115	07	20	77	260	..	374	16	22	25	6	10	15	11	..	..	..	..	..	..	..
November	45	144	10	204	..	..	35	280	10	102	02	22	78	312	..	705	..	13	27	16	..	8	..	..	..	..	..	..	..	..
December	38	72	..	62	14	..	34	25	..	19	..	14	77	235	10	687	01	18	29	..	..	..	..	..	12	..	..	..	..	..
January	62	27	..	69	15	..	21	88	..	36	10	15	133	244	..	398	08	16	7	6	10	2	10	..	14	6	10	14	01	11
February	37	95	..	80	15	..	10	..	..	..	..	..	109	200	15	395	12	..	7	4	..	3	15	..	14	9	..	17	12	04
March	35	25	05	56	10	..	12	..	..	..	..	..	115	177	18	127	01	..	7	1	08	3	10	..	14	21	..	52	07	18
April	50	136	..	324	..	22	17	164	12	139	18	04	100	679	..	1051	01	20	18	5	10	8	16	..	31	28	..	59	16	11
May	60	55	..	31	..	..	18	226	09	121	14	06	94	755	..	594	19	..	18	12	..	10	10	07	30	34	..	66	08	09
June	38	192	..	371	17	12	20	152	..	15	04	20	100	747	..	835	..	19	18	56	..	65	13	03	30	42	..	65	06	08
July	42	21	..	42	..	..	50	179	..	74	12	07	120	817	..	1153	11	11	24	16	..	47	15	..	28	34	..	81	06	13
August	42	110	10	143	10	18	60	214	..	68	17	02	94	717	..	1350	14	06	24	205	..	104	10	..	28	..	..	..	..	..
September	42	27	..	27	17	11	80	158	10	71	..	19	92	664	..	849	..	06	24	157	..	125	06	..	28	40	..	60	14	19
	45	1149	05	1505	2	11	33	1667	01	764	09	09	99	5809	3	8522	8	11	19	486	..	395	16	10	19	214	10	417	13	21

(B 2.) — CONTINUED.

MONTH.	WAVERLEY						OLDHAM.						RENFREW.						UNLACKE.						UNPROCLAIMED.					
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.
October	311	1348	..	502 14	..	..	50	113 18	167 06	06	194	351	..	738	13 06	3	3 10	28 19	..	15	20	..	29 03	09	15	20	..	29 03	09	15
November	267	1378	..	501 09	..	..	37	84 15	126 07	..	198	1035	..	1027 03	16	24	..	1 10	..	19	40	..	35 03	22	19	40	..	35 03	22	19
December	197	808	..	343 19	..	..	43	110 10	158 02	07	173	727	..	967 12	20	24	..	42 07	09	12	41	..	31 06	21	12	41	..	31 06	21	12
January	190	1339	..	488 14	06	37	54	..	46 01	10	148	346	..	553 03	09	23	50	44 06	..	6	16	..	12 11	02	6	16	..	12 11	02	6
February	174	941	..	273 11	..	..	35	50 10	70 17	11	142	425	..	648 02	19	23	54	54 16	04	5	..	..	10 14	15	5	..	..	10 14	15	5
March	174	1076	..	425 18	..	..	36	53 10	95 14	..	192	966	..	1387 07	12	23	47	39 15	10	5	..	..	4 10	..	5	..	..	4 10	..	5
April	141	854	..	314 10	12	54	54	70 10	85 05	..	192	782	..	831 15	..	30	70	51 10	..	5	..	..	6 05	..	5	..	..	6 05	..	5
May	140	487	..	184 17	20	68	84	..	145 19	15	231	745	..	837 12	..	30	134 10	93 02	14	5	..	..	1 08	..	5	..	..	1 08	..	5
June	140	829	..	236 05	11	77	93	15	199 10	..	192	466	..	671 10	..	30	113 15	77 11	..	5	..	..	3 18	..	5	..	..	3 18	..	5
July	144	609	..	282 06	06	89	116 15	174 09	14	192	460	..	499	..	51	152	95 07	..	12	..	..	..	..	..	12	..	..	..	..	..
August	145	1028	..	407 15	12	58	73 03	47 09	11	230	737	10	595 17	..	51	215	149 11	04	12	..	..	..	..	..	12	..	..	..	..	..
September	144	592	..	172 17	22	39	54	..	42 10	..	192	729	..	643 05	..	51	347	268 06	..	12	..	..	..	..	12	..	..	..	..	..
	181	11289		4134	18	17	52	959	16	1359	12	02	10	9401	02	10	1211	15	947	01	17	..	..	..	9	117	..	135	00	21

(C.)

COAL RAISED AND SOLD IN THE PROVINCE DURING THE YEAR ENDED SEPTEMBER 30, 1867.

COUNTY.	Round.	Slack.	TOTAL ROUND. N. S. Proper.	TOTAL SLACK. N. S. Proper.	TOTAL. N. S. Proper.
Cumberland	Tons. 8100	Tons. 1719	Tons.	Tons.	Tons.
Pictou	114866	17743 $\frac{1}{4}$	122966	19462 $\frac{1}{4}$	142428 $\frac{1}{4}$
Cape Breton	315954	14156 $\frac{3}{4}$	Cape Breton.	Cape Breton.	Cape Breton.
Inverness	3711 $\frac{1}{2}$	765			
Richmond .....	.....	.....	
Victoria	4900 $\frac{1}{2}$	162	324566	15083 $\frac{3}{4}$	339649 $\frac{3}{4}$
	447532	34546	447532	34546	482078

RETURNS COAL RAISED AND SOLD DURING YEAR ENDED SEPTEMBER 30, 1867.

MINE.		County.	QUARTER ENDED DECEMBER 31, 1866.						QUARTER ENDED MARCH 31, 1867.									
			Raised.		Sold for Home Consumption.		Exported to Colonies.		Exported to other Countries.		Raised.		Sold for Home Consumption.		Exported to neighbouring Colonies.		Exported to other Countries.	
Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	
Cumberland.	212½	1893	1051	696	49	104	877	646	209	170	1099	80	235					
Joggins.																		
Lawrence.																		
Maccan.	300	200				300												
St. George.																		
Victoria.	290					249			140									
Albion.	44128	8571	5318	2213	3327	2142	7176	360	33568	5032	171	407						
Acadia.	3451	1527	1244	405	352	58	353		1576½	1089½	71½	1116						
German.																		
Intercolonial.																		
Montreal and Pictou.																		
McBean.	5½	11½																
McKay.	70	7		60	6													
Nova Scotia.																		
Acadia.																		
Black House.	20177	450				85		16394			15844	694						
Caledonia.	1268½	300½	10								412	44	13½					
Clyde.						220												
Collins.	7784		3249½	528		780	92	7807			7926½	180				1603		
Glance Bay.	6394	1520	4210½	1023		1346	9	2503			5384	1011	139½			177		
Gowrie.	85		25								18		18					
Ingraham.	1678½	55	160	6				888½	88½		2632½	96½	4½	19				
International.	12640	1087	178	8		78		10187½			8860	2090	75	12½				
Lingan.																		
Matheson.	372½		280½			81												
Mira Bay.																		
South Head Cow Bay.																		
Sydney.	29165	3423	15301½	605	13038			2892			18860	6472	862½	151½	891		174	
Victoria.																		
Inverness.	550	420	38	28	385½	190½					643		12					
Cape Breton C. M. Co.																		
Chimney Corner.																		
Richmond.																		
Black Rock.																		
New Campbelltown.	1497										1005							
	131911½	13603	32554½	4934	21737	3223	48715	618½			97807½	16966½	2430½	1942	1126		1954	

COMPARATIVE STATEMENT

COAL RAISED AND SOLD IN THE PROVINCE DURING THE YEARS ENDED SEPTEMBER. 30, 1866-67.

COUNTY.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1866.	1867.	1867.	1867.
	Round	Round.	Slack.	Slack.	Total Round. N. S.	Total Round. N. S.	Total Slack. N. S.	Total Round and Slack N. S.	Total Round and Slack N. S.	Deficiency Round N. S.	Deficiency Slack N. S.	Total Deficiency Round & Slack. N. S.
Cumberland.....	15008.00	8100.00	1441.00	1719.00								
Pictou.....	18244.50	11486.00	22485.07	17743.50	198253.50	122966.00	23926.70	222178.12	142428.05	75286.05	4464.02	73750.07
Cape Breton.....	352515.00	315954.00	14065.10	14156.15	C. Breton.	C. B.	C. B.	C. B.	C. B.	C. B.	C. B.	C. B.
Inverness.....	2063.10	3711.10	1206.00	765.00								
Richmond.....	739.00	.....	223.00	.....							
Victoria.....	7828.10	4990.10	453.00	102.00	363179.00	324536.00	15947.10	379123.00	339649.15	38610.00	863.15	39473.15
	561428.50	447532.00	38873.17	34546.00	561428.50	447532.00	38873.17	601302.0	482078.00	113890.05	5327.17	119224.02

(D.)

COLD.

MINES DEPARTMENT FOR TWELVE MONTHS ENDING SEPTEMBER 30, 1867.

DISTRICTS.	RECEIPTS.				EXPENDITURE.					
	Rents.	Royalty.	Sites.	Totals.	Salaries, &c., Surveys.	Return of Rents.	Return of Royalty.	Royalty Commis'n.	Lands.	Totals.
Oldham	\$314 05	751 05	.....	1065 10	\$189 00	4 00	27 59	41 92	.....	262 51
Renfrew	887 50	5120 53	.....	6008 03	289 00	4 00	.....	246 53	.....	539 53
Waverley	70 00	3076 03	.....	3146 03	78 00	.....	680 34	73 43	.....	831 77
Tangier	454 82	278 42	.....	733 24	258 25	40 00	.....	.....	4 60	302 85
Stormont, "Isaac's Harbor"	550 06	874 06	.....	1424 12	216 00	.....	.....	39 90	.....	255 90
Wine Harbor	1229 50	512 08	.....	1741 58	214 75	.....	.....	24 95	.....	239 70
Sherbrooke	1424 00	4732 70	.....	6156 70	443 90	2 00	.....	192 84	21 00	659 74
Ovens	64 00	15 31	.....	79 31	.....	.....	.....	.....	.....	.....
Montagu	150 00	.....	.....	150 00	.....	.....	.....	13 89	.....	13 89
Waganatkook	60 00	1 71	.....	61 71	125 00	.....	.....	.....	.....	125 00
Uniacke	726 00	287 62	.....	1013 62	47 25	.....	.....	8 57	.....	55 82
Lawrencetown	454 00	66 24	.....	520 24	.....	.....	.....	.....	.....	.....
Unproclaimed	444 00	6 61	.....	450 61	168 60	.....	.....	.....	.....	168 60
Prospecting Licenses .....	.....	.....	.....	1328 84	.....	5 75	.....	.....	.....	5 75
Roads .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	426 33
Totals	6827 93	15722 36	.....	23879 13	2029 75	55 75	707 93	642 03	25 60	3887 39

(E.)
OTHER THAN GOLD.

MINES DEPARTMENT FOR TWELVE MONTHS ENDED SEPTEMBER 30, 1867.

COUNTIES.	RECEIPTS.					EXPENDITURE.			
	Licenses to Search.	Licenses to Work.	Royalty.	Totals.		Return Licenses to Search.	Return Licenses to Works.	Surveys.	Totals.
Guysborough	\$80 00	50 00	.....	130 00					
Annapolis	280 00	.....	.....	280 00		\$20 00	.....	.....	20 00
Antigonish	60 00	.....	.....	60 00					
Colchester	420 00	950 00	599 00	1969 00		180 00	.....	.....	180 00
Cumberland	40 00	.....	.....	40 00					
Halifax .....	.....	.....	.....	.....	
Ilants	20 00	.....	.....	20 00					
Kings	920 00	550 00	14254 45	15724 45		240 00	50 00	.....	290 00
Pictou	520 00	500 00	49262 75	50282 75		160 00	.....	6 00	166 00
Cape Breton	300 00	350 00	.....	650 00		40 00	.....	13 87	53 87
Inverness	260 00	50 00	.....	310 00		60 00	.....	.....	60 00
Richmond	80 00	.....	369 80	449 80		40 00	.....	.....	40 00
Victoria									
Total	2980 00	2450 00	64486 00	69916 00		740 00	50 00	19 87	809 87

Supplementary Account of Expenses common to both Branches of the Department.

Stationery and Printing	\$1437.35
Office Expenses	77.00
General Expenses, Salaries, &c.	7513.01
	<hr/>
	\$9027.36

(F.)

COMPARATIVE STATEMENT

OF RECEIPTS AND EXPENDITURE FOR TWELVE MONTHS ENDED SEPTEMBER 30, 1866, WITH TWELVE MONTHS ENDED
SEPTEMBER 30, 1867.

RECEIPTS.	12 Months, 1866.	12 Months, 1867.	EXPENDITURE.	12 Months, 1866.	12 Months, 1867.
Rents "Gold"		\$ 6827 93	Return Royalty "Gold"	\$ 2483 69	\$ 707 93
Royalty "	\$ 5936 86	15722 36	Commission on Royalty "	669 49	642 03
P. Licenses "	12265 13	1328 84	Salaries and Surveys "	2068 40	2029 75
License to Search "Coal"	566 49	2980 00	Return Rents	170 00	50 00
Royalty	7520 00	64486 00	Lands	1219 80	25 60
Licenses to Work	46939 75	2450 00	Stationery and Printing	638 00	1437 35
	3650 00		Office Expenses	569 55	77 00
			General Expenses	7432 42	7513 01
			Return Licenses to Search	780 00	740 00
			Return Prospecting Licenses		5 75
			Surveys "Coal"	315 86	19 87
			Roads		426 33
			Return Licenses to Work	200 00	50 00
			Total Amount	16547 21	13724 62
			Balance	60331 02	80070 51
Total	\$ 76878 23	\$ 93795 13	Total	\$ 76878 23	\$ 93795 13

REPORT

OF THE

CHIEF COMMISSIONER OF MINES

FOR THE

PROVINCE OF NOVA SCOTIA

FOR THE YEAR

1868.



HALIFAX, N.S.

PRINTED BY H. W. BLACKADAR,

PRINTER TO THE QUEEN'S MOST EXCELLENT MAJESTY.

1869.

REPORT.

*Department of Mines,
Halifax, February 20, 1869.*

SIR,—

I have the honor to submit, for the information of His Honor the Lieutenant Governor, the following Report on the affairs of the Department of Mines for the financial year ending the 30th day of December, 1868. In consequence of the change in the termination of the fiscal year from the 30th September to the 31st December, this report will embrace a period of fifteen months.

In a review of the mining operations for the above-named period, I am happy to be enabled to report a state of progress which I cannot but think satisfactory.

During the year, there has been remarkable activity in prospecting and in opening new mines, both in the old and new districts. Eleven new Crushers have been licensed, and there are six others in the course of erection. Financially, the success has been more than was expected—the receipts being larger than in any previous year.

STORMONT.

The mining in this District continues to be somewhat limited, and the return of gold less than last year, which is accounted for by the Isaac's Harbour Company having stopped work, owing to the misfortune of their crusher being burnt in the early part of the season.

The Mulgrave Company have carried on their mining operations with vigor, and have been successful in reaching at the shore, at a depth of 274 feet, the celebrated swell or shoot, out of which so much gold has been obtained near its

outcrop—a distance from the shore of from fifteen hundred to two thousand feet.

From the shore, for a distance of about 1900 feet eastwardly, the outcrop of the lead is about 6 inches in thickness, when it widens out to two feet: it has been found that this swell is about 50 feet in depth, with a dip to the west about 1 foot in 4 feet 9 in., and wherever this swell has been mined, it has averaged about 2 oz. to the ton. Where now reached at the shore, it is three feet thick; the thin part of the lead carries but little gold, and does not pay for working.

There have been some discoveries of alluvial gold on the shore at the mouth of the harbor, which promise to be profitable, and preparations are being made to wash on a large scale in the spring. At Seal Harbour, a large amount of labour has been expended in prospecting for a lead, out of which a number of very rich boulders are supposed to have come, but as yet without success.

At the head of Country Harbour, a considerable amount of prospecting has been done, and a small Crusher built.

WINE HARBOUR

Shews an increase in the quantity of gold obtained. In the older parts of the District, the ground was originally taken up in small lots: these have lately been purchased, and united into large areas, and preparations are now being made to mine on a large scale. One firm, now engaged in building a Crusher of fifty stamps, calculates on a handsome profit from quartz yielding as low as four to five dwts. to the ton.

At Indian River, a large amount of prospecting has been done, and considerable extent of ground applied for and under lease.

SHERBROOKE.

This District has progressed during the last year in a remarkable degree. The increase in the number of men employed, the number of mines opened, and the building of

five new Crushers, mark a rate of developement without parallel in the history of our gold mines.

Important discoveries have been made at Cochran Hill and other outlying parts of the District, and a large number of areas have been leased.

TANGIER

Shews an increase of gold produced, but as yet the operations are only on a small scale. Some large and valuable properties are still lying idle, principally from want of capital to work them. The Strawberry Hill mine is profitably worked, and preparations are being made for more extensive operations. At Old Tangier there has been no progress made; why, it is hard to say. In 1867, there was one mine worked continuously and profitably; and during the summer, a large and rich lead was found on another property; but, strange to say, very little work has been done upon either of those properties.

MONTAGU

Also shews an increase of gold produced, but the mining has not been of a more extended character than that of the previous year. Only one mine has been worked with any kind of vigor, the returns from which are very good: a new lead has lately been opened, which is likely to prove remunerative. Preparations for renewing the works upon the old McQuary mine are being made; pumps, engines, &c., are in course of erection. There has also been some progress made in opening a new mine, and a small Crusher, now building, will be ready for operation in a few days.

WAVERLEY

Still shews a falling off, there being but one or two mines continuously worked. I have had a geological survey and plan made of the working part of this District by Professor Hind, M.A., F.R.G.S., which, I have every reason to believe, will be an efficient guide to the opening up of the mines, and

also be the means of directing the attention of capitalists and miners to the real merits of a district, second, I believe, to none in the Province.

OLDHAM.

Operations are still carried on in this District in a small way, one mine only having been continuously worked for some time past. There has, however, been a new mine opened, which promises to be very profitable, and an increase of ore may be confidently expected from this locality. There is a large field for operations in this gold field, and a geological survey would, in my opinion, be of very great benefit: considering the many openings that have been made, the work could be easily done, and with a great degree of accuracy.

RENFREW

Continues to return a large quantity of gold, but has not reached that of last year; the Ophir and one or two others furnished the greater part of it. It was hoped from the splendid success of the Ophir Company that prospecting would have been carried on with energy; but little has been done outside of the old workings.

LAWRENCETOWN.

There are two extensive mines in this locality, each with a Crusher attached, both in operation. One of these mines has lately been sold, and the other is about changing hands. Both, it is said, will be actively worked in a short time. There is also a new mine, on which a considerable amount of labour has been expended, and which promises to be remunerative. Judging from the return from the two first opened mines, and the shew of gold in the new one, these three mines will, no doubt, prove profitable; and, considering the success of prospectors outside of the above areas, the District will, doubtless, eventually be a large and profitable one.

UNIACKE.

This District has steadily progressed, and the return of gold is larger than that of last year. Two Crushers have been built since my last report. The first opened mine—the “Uniacke Mining Association”—has been largely extended, and proves highly remunerative. Numbers of others shew good returns. Gold-bearing leads have been found over an extensive area. The District, which is a large and important one, bids fair to be one of the best in the Province.

OVENS.

This District has done little in the way of producing gold since my last report. A good deal of work has been done, and some quartz obtained, which is of good quality. A furnace was built for smelting the quartz with the Stephens flux, which has not, however, proved a success. At Indian Path, which may be included in the Ovens District, a Crusher has been built and a mine opened, which is proving successful, and with every appearance of continuance.

WAGAMATCOOK

Is situated on the Middle River, in the County of Victoria, about fifteen miles from Baddeck. In April, 1864, applications for a considerable number of areas were made, principally on three streams running into the river; they were so applied for, for the sake of the alluvial gold there deposited, of which some very fine specimens had previously been found. In the ensuing summer, a number of men were employed in washing, and although a considerable amount of gold was obtained, there was not sufficient to pay expenses. During the past year, attention has been again turned to this locality, and prospectors have met with such success that a large Crusher is in course of erection; a number of gold-bearing leads have been found, one, at least, of large size; also some very fine worn specimens of gold in the alluvial deposits.

DISCOVERIES.

The past year has been unprecedented in the amount of prospecting done and the number of discoveries made, extending from Cape North to Cape Sable. At Cape North, gold was found and some prospecting licenses applied for, but the results have not been very satisfactory. A vein of copper ore was, however, discovered, and a number of licenses to search were issued.

At River Dennis, some discoveries were made, and a Crusher built. Gold has also been found at Broad Cove Road. Discoveries were also made in Nova Scotia Proper: at Cape Porcupine, Cape Canseau, White Haven, Tor Bay, Clam Harbor, New Harbour Road, and Dover; at Beekerton Island in the County of Guysborough; Cape St. George in Antigonish County; Sutherland River and Grant's Brook in Pictou County; Upper Stewiacke in Colchester County; Ecumsecum, Mosher's River, Salmon River, Moose Head, Harrigan Cove, Sheet Harbour, Leslie's Brook, Beaver Dam, Killag, Fifteen-mile Stream, Musquodoboit, Birch Cove and Long Lake in Halifax County; Crushers are built and being built at the following places, included in the above, viz: two at Fifteen-mile Stream, and two at Musquodoboit. Gold has also been found at Ardois Hill, Still Water, and Meander River in Hants County; Black River, Gaspereaux Mountain in King's County; Indian Path and Chester Road in Lunenburg County; Cranberry Head and Pubnico in Yarmouth County. The above is an imperfect list, as there are many places in the vicinity of those named that have not been mentioned; my object is merely to shew the extent of country over which gold has been found. It will be seen that, *outside* of proclaimed districts, there have been, during the year, three Crushers built, and that five are in course of erection.

In many of these localities but little has been done; but from the number of Crushers built, it is shewn that pros-

pecting and the opening up of new mines have never been more successful, nor more vigorously prosecuted.

It is now a well established fact, that the so-called veins are true beds, and extend over the whole country, but are only available where, by upheaval, they are brought to the surface. These beds are found not to be equally auriferous in all parts, but to hold the gold, to a certain extent, in bands, running in a northerly and southerly direction, and with wonderful regularity; these bands vary in width as in richness, and the spaces between them vary also; and when a lead is found to be gold-bearing in any part, there is no part totally without it. As to whether these bands are continuous or not, we have not sufficient data to shew; but from the distance that they have been worked (about 300 feet), we have reason to believe that they are. It has also been found that when one lead in a group is auriferous, the others are generally more or less so. Whether all the places in which gold is found in this Province belong to the same band or not is at present unknown. Prof. Hind, in his surveys, has found some reason to believe that Uniacke, Waverley and Lawrencetown all belong to the same group.

The mining hitherto has, to a great extent, been done on the supposition that the quartz was in veins, and not in beds; and when a rich spot is worked out, or the leads narrow down and disappear, it is supposed that the mine is exhausted. A number of well-paying mines have been abandoned at a depth when manual and horse labour could not perform the hoisting and pumping required, the profits having been divided as made, and no working capital set aside to meet emergencies and provide necessary machinery. Commencing mines on a small area of ground, has also proved very detrimental to the gold mining interest, and sinking shafts seems to be a mania. We give as an instance, 30 shafts sunk on one lead, in a distance of eighteen hundred feet, and 23 shafts in a distance of sixteen hundred

and fifty feet on a lead not more than fifty feet from the first named. There is also a great want of appliances and skill in saving the fine gold; it is computed by good authority that, at least, 30 per cent. of this gold is lost in the tailings. This loss has not been of so much importance under the system of mining hitherto followed; but if the poor ores are to be worked, a remedy must be provided. In consequence of this imperfect and loose system of mining, it has become an opinion too common, that a mine, in this Province, can only last two or three years. Whereas, from the position and characteristics of the gold-bearing rocks, as shewn above, a mine having a large surface, and properly located with regard to the position of the leads, with works economically and scientifically managed, so as to work the poor with the rich ores, and with proper appliances and skill in saving the fine gold; would last for an indefinite period of time, and would have many more chances of success than under the present system of working.

COAL MINES.

I have still to report a state of depression in the Coal Trade. From many of the small mines no coal has been raised, and from some others for only a portion of the year. There has, however, been considerable work done in extending old works, opening up new mines, and prospecting generally, preparatory to an expected increase in the trade.

In Cumberland County a large seam has been opened at Spring Hill, at a distance of from 3 to 4 miles from the line of the Intercolonial Railway. This is an important discovery for Cumberland, as the seams worked heretofore were small, and the proximity of the Railway affords a means of shipment that could not otherwise be obtained except at a large cost.

In Pictou County, the opening of the Drummond Colliery, with its equipment of 7½ miles of railway, and a splendid wharf on the Middle River, at which there are 5 loading places at present; the extensive enlargement of the Acadia Mine, with its railway connecting with the Nova Scotia Railway, and its extensive wharf at Fisher's Grant; and the so called New Mine, opened by the General Mining Association, put this county in a position to supply an almost unlimited demand, at the shortest notice.

In the County of Antigonish, there have been some important discoveries. The works are as yet only of a preparatory character; but from statements made by those engaged in the enterprise, I have no doubt but that the mines will be important ones, and will add very materially to the interests of the county.

CAPE BRETON.

In the island of Cape Breton, coal mining continues in the same depressed state as last year. Some little progress has been made in the opening up of new mines, but nothing to compare with Pictou County.

In the foregoing report, I have confined myself to general remarks: the accompanying report of the Inspector of Mines, with the tables, made any other course unnecessary. In the adjourned Session of the Legislature last summer, the plan of Registration, proposed in my report of last year, was passed into law, which cannot but have an important effect in giving greater security to mining titles.

I have the honor to be,

Your obedient servant,

ROBERT ROBERTSON.

The Honorable the PROVINCIAL SECRETARY.

INSPECTOR'S REPORT.

*Department of Mines,
Halifax, January 23, 1869.*

SIR,—

In submitting the following Report on the mining operations in the Province during the past year, I regret to have to record a continuance of that depression in the Coal Trade, to which reference was made last year. The operations at many of the mines have been upon a considerably reduced scale, compared with former years: some of the mines have been worked only a short period, and others have remained entirely inoperative during the whole of the year. Notwithstanding this unfortunate position of so important a branch of industry, the energy hitherto exhibited in prosecuting mining researches has not been altogether suspended: fresh openings have been made, and the preliminaries taken for their development, on the revival of the trade to that healthy state which, in its external bearings, is of such national importance. The coal mining operations have, from the cause referred to, been very limited, and the extension of the workings is in consequence correspondingly small.

CUMBERLAND COUNTY.

The operations in this County have been in three localities only, viz., at the Joggins, the Macan, and the New York and Acadia mines. At the former of these, the

JOGGINS,

the levels in the old or King seam have been continued eastward, after passing through a down-throw fault to the east of 46 feet; these levels are now 1870 feet from the shore. The seam exhibits little alteration in size or quality. The principal workings during the year have been in an upper level driven between the crop of the seam and the workings from the main level, and upwards of 600 yards back from the face of that level. They present no new features worthy of remark. Operations have also been carried on in the other seam

opened at this colliery, viz., the Hard Scrabble, or Cumberland seam ; they have been confined nearly altogether to a removal of some of the upper pillars formed in the previous working—an operation which has so far been successfully accomplished. The level has been extended only a few yards beyond the distance driven in 1866.

The expenditure to December 31st* is returned as follows :—

Adits and Levels	\$790 00
Drains, &c.....	220 00
Machinery	530 00
Houses	350 00
Prospecting, &c.....	570 00
Totals.....	<u>\$2460 00</u>

MACAN.

At this colliery, mining was carried on for a short period in the early part of the year, chiefly, however, in connection with an extension of the slope ; and was prosecuted until the means of raising the water, met with in the operation, were found to be inadequate, and the provision of more powerful machinery became necessary. The work was then suspended ; the steam-engine was replaced by one of greater power, and other arrangements made for working the mine effectually. Since the completion of these changes, however, nothing further has been done excepting the driving of a slope from the crop, a short distance from the face of the old west workings, out of which coal is being taken for land-sale purposes. The returns give the following expenditure :—

Slope	\$250 00
Adits and Levels.....	104 00
Machinery.....	1000 00
Total.....	<u>\$1354 00</u>

NEW YORK AND ACADIA.

The operations in this mine have, during the year, been of but small extent, although they have been somewhat steadily pursued. The slope has not been driven any further to the dip, as was originally intended—the workings having been confined to the levels, and the bords turned out of them. The east level is now about 200 feet from the slope, at which distance it has been standing since April last ; the west level has also been driven about 250 feet. A portion only of

* The expenditure at each mine is given to this date.

the seam is worked in the bords; this is about 2 feet 10 inches thick; above which there are 2 feet 2 inches of coal, with clayey partings, that is not taken down, but left to form a roof. A slight thickening of the workable coal is observed in proceeding westward.

An expenditure is returned of—

Adits and Levels..	.....\$453 00
Drains, &c.....	400 00
Total	<u>\$853 00</u>

At none of the other collieries, formerly in operation in this County, viz., the Victoria, the Lawrence, the Chiegnecto, and the St. George, has any mining been done at any period during the year; and their condition is as reported last year.

No new coal operations of any moment have been begun in this County, with the exception of some explorations at Spring Hill, on the areas held by Mr. Black, by whom six shafts have been sunk, varying in depth from 20 to 40 feet. These have been put down at intervals, over a distance of about three quarters of a mile, and have proved a very fine seam of coal, the thickness of which is 11 feet 3 inches; it is being worked for land-sale purposes. Other seams have also been found on the same property, which have not yet, however, been fully opened. They appear to be of a workable thickness.

The expenditure on these operations is returned as follows:—

Shafts.....	\$148 00
Adits and Levels	92 00
Drains, &c.....	3 00
Prospecting, &c.....	1195 00
Total.....	<u>\$1438 00</u>

The settlement of the route of the Intercolonial Railway, which, it is now understood, will pass within 3 or 4 miles of the mines, and more particularly the speedy commencement of its construction, will tend to hasten the development of this district; and a very important addition to the coal producing capabilities of the Province, it may be reasonably expected, will, in no long time, ensue. The position of this coal-field in relation to the sea-board, and the facility of transmission thence of its produce, must give it some advantage over more distant localities, and the active prosecution of mining operations may therefore, I think, be expected during the year.

PICTOU COUNTY.

Notwithstanding the serious depression in the trade, the mining operations in this County have been continued at the principal collieries with considerable vigor. They have been chiefly, however, of an expansive character, being in some cases but the completion of work necessary to the commencement of mining on an extensive scale, and in others the provision of increased powers of production. Of the latter class are those at the

ALBION MINES.

The extensive operations begun at these mines last year, and which consist of an entirely new and distinct opening in this important section of the Pictou coal-field, are now rapidly approaching completion. The shafts have been sunk to the main seam, which was reached at a depth of 840 feet, and are being prepared for their specific purposes, viz., hoisting and pumping; the hoisting engines are ready for use, and the erection of the pumping-engine is being proceeded with, the house in which it is to be placed being sufficiently advanced for this purpose. The whole of these works are of a massive and substantial character, and are constructed with a view to a durability of no mean limit. The entire arrangements are of a high class character, and whether as regards the style and power of the engines or the construction of the erections, they form the most extensive and improved mining establishment in the Province, and probably in America.

The necessities of the trade may not require an early commencement of active operations at these new works; they are, however, being placed in such a position as will enable a largely-increased production to be speedily made, should occasion arise.

The actual mining operations during the year have been altogether in the Main seam at the Dalhousie pits, the Deep seam not having been worked since December, 1867. They have consisted entirely of a working of the old pillars, and have been accomplished in a satisfactory manner, considering the height and size of the pillars and the position of the seam.

The following is the expenditure as per returns :—

Shafts.....	\$28250 92
Drains, &c.....	1031 72
Machinery and Engine-houses.....	65769 54
Houses.....	624 70
Railway.....	5092 08
Total.....	<hr/> \$100768 96

These works are now assuming an important position as respects their productive capacity. During the year, the workings in the seam on the Carmichael area have been considerably extended, and the surface arrangements have been placed on a footing commensurate with the underground requirements.

In the mine the South levels have been driven 550 yards, and the North levels upwards of 400 yards; out of these levels, and 100 yards apart, drifts are driven to the rise and boards turned out of them, a pillar of coal 22 yards in width being left to protect the level. The coal from the bords is brought down these drifts after the manner of a self-acting incline, the only difference being that the empty tub is taken up by the descent of a tub or wagon loaded to exceed it in weight, and which in its turn is raised by the descent of the tub of coal. This arrangement prevails on each side of the slope and as several of these incline or balance ways, are now in use, and in course of preparation, the output of the mine can be very largely increased. It may not be uninteresting to describe the mode of working this seam, the thickness of which is 19 feet 6 inches. The bords are driven 15 and 12 feet wide according to their distance from the level, from 15 to 18 feet of coal being left between them. The entire seam is not removed in the bords, 13 inches being left at the top to support the overlying strata which from its broken character is not of itself a good roof. Beneath this about 6 feet of coal is taken away in the first working, and the remainder with the exception of about 2 feet 6 inches, next the bottom of inferior quality, is taken in a subsequent operation.

The surface arrangements have undergone a considerable change during the year: a double cylinder horizontal engine of 50 horse-power, with 6 boilers for the supply of steam, has been erected, and is used exclusively for hoisting; the engine formerly used for this purpose being applied to work the pumps and lift the coal from the bank to the height of the screens.

The usual erections necessary for the equipment of an establishment prepared for work on a good scale have been nearly completed, and in other respects the appearance of the mine and its fittings is indicative of a desire to place this colliery in a position to largely extend its operations. The other requirements for this purpose, the provision of a place of shipment and railway communication therewith, have also been completed; and the coal is now taken in cars, direct from the mine, to a very commodious wharf erected at Fisher's

Grant near the terminus of the Nova Scotia Railway. Although the mining operations are now carried on chiefly on the Carmichael area, the McGregor seam, on the Fraser area, has not been entirely abandoned—a few places being kept at work on that seam for land-sale purposes. The other necessities of the establishment, the smith's, carpenter's, and fitter's shops are also still maintained at their original place, near the McGregor openings.

Near the Acadia mines, as the operations on the Carmichael area are now termed, quite a village has sprung up—a large addition having been made to the number of the houses during the year, and the locality is now called Westville. The extension of these works has necessarily involved a large expenditure; it is stated in the returns to be as follows:—

Drains, and other surface work.....	\$5179 38
Machinery	14417 69
Houses.....	5936 19
Railway.....	40880 46
Wharf.....	14098 04
Total.....	<hr/> \$80511 76

BEAR CREEK.

The development of this colliery has been very energetically carried forward during the year, and the establishment of the works on a very efficient footing has now been brought to completion. A pair of slopes, 28 feet apart, have been driven 730 feet to the dip, which is here nearly due east, and at an angle of 16° ; and levels have been turned on each side, out of which the working places are made in a somewhat similar manner to that in practice at the Acadia mines. The mode of working the seam is, however, a little different: about 11 feet of coal being taken away in the first working; from 5 to 6 feet being left next the roof, and about 2 feet of coarse coal at the bottom.

The ventilation of the mine has been provided for by sinking a shaft 8 feet square, the depth of which is 87 feet; it is surmounted by a tube 40 feet high. A furnace is placed at the bottom of this shaft, and the air is conducted to it in the ordinary manner.

The arrangements for hoisting and screening the coal are alike excellent in character. A double-cylinder horizontal steam-engine of 50 horse-power has been erected, with 3 boilers, each 30 feet long and 5 feet diameter.

This engine drives the hoisting-drums by friction-gearing, the action of which is very satisfactory. A large roofed heapstead, for screening

and banking out the coal, has also been built; and a small steam-engine applied to raise the coal from the bank to the level of the screens.

The necessary accompaniments of an extensive colliery have also been provided, to a considerable extent: a large tract of land has been cleared about the mine, 39 workmen's houses have been built, an agent's house, stables, workshops, and a commodious locomotive-shed. The coal is shipped at the Middle River, distant from the mine about $7\frac{1}{2}$ miles, where an extensive and well-constructed wharf, at which there are at present five shipping places, has been built. It is connected with the mine by a line of railway, the formation and fittings of which are alike excellent in workmanship and materials. Two locomotives convey the cars, which carry from 6 to 7 tons of coal each, between the mine and the wharf.

Although the shipments from this colliery during the year are only 3428 tons, a quantity of coal has been raised, and the general arrangements are now in such a form as will enable operations to be carried on to a largely-increased extent.

The expenditure is returned as follows :—

Slopes.....	\$27435 36
Adits and Levels	15486 71
Drains, and other surface work.	3344 46
Machinery.....	13674 25
Houses.....	16874 74
Railway.....	136080 00
	<hr/>
	\$212895 52

In addition to the preceding operations, the Intercolonial Co. have, during the year, made some explorations on an area, also belonging to the Co. and adjoining the Montreal and Pictou colliery: trial-pits and bore-holes have been put down to various depths and coal found; but no openings have yet been made on it.

The only other mines on the west side of the East River are the Nova Scotia and the Montreal and Pictou. At the former of these, some coal was raised during the first and second quarters of the year; but, since then, nothing has been done. The latter is in the same condition as reported last year.

On the east side of the river, an almost similar inaction has prevailed at the McKay and McBain mines; at each of which a few tons only of coal have been raised, and their position is, in other respects, unaltered. The Messrs. McBain have, however, opened a very fine seam of coal, on another and adjoining area, on the south-east, also belonging to them, which was discovered in the early part of the year.

This seam is 8 feet 6 ins. thick, and is lying at an angle of 35° , the course of the dip being N. 33 W. A slope has been put down 60 feet, and a level driven a short distance on each side. Another, and apparently an overlying seam, has also been found on the same property, the size of which has not yet been exactly ascertained.

The returns shew an expenditure as follows:—

Slopes.....	\$870 26
Adits and Levels.....	192 75
Drains, &c.....	681 51
Houses.....	642 02
Prospecting.....	422 65
Total	<u>\$2809 10</u>

MARSH.

The Pictou Mining Co., by whom a shaft was begun last year at their Marsh Colliery, suspended operations during the winter, but resumed them in April last. This shaft, the size of which is 13 feet 6 ins. by 6 feet, has now been sunk to the seam, which was reached at a depth of 235 feet. It is of the following section:—

Coal (coarse).....	0' 3"
" (good).....	3 8
Total	<u>3 11</u>

Openings are being made on each side of the shaft, but some time must yet elapse before the mine can be in working order. No further progress has been made with the projected railway, and much remains, therefore, yet to be done to place this colliery in a productive position. An expenditure is returned of—

Shafts.....	\$9271 66
Drains, &c.....	174 10
Machinery.....	1616 00
Houses.....	300 00
Prospecting.....	100 00
Total.....	<u>\$11461 76</u>

MERIGOMISH.

On the area belonging to the Merigomish Co. little has been done during the year. The only operations that have been carried on, are the sinking of two slopes—one of which is on the northern, the other on the southern crop of the seam sunk to by the Pictou Mining Co. The northern slope has been driven 130 feet; but in consequence of the

seam being in a disturbed condition, operations have been discontinued. The other was driven about 60 feet, in order to ascertain the position of the seam, which was found to be regular. The seam appears to be here in the form of a narrow basin, on the western edge of which these operations are situated. The expenditure is stated to be—

Slopes.....	\$1263 18
Machinery.....	190 00
Prospecting.....	123 00
Total.....	<u>\$1576 18</u>

COAL BROOK.

At Coal Brook, a short distance from New Glasgow, the Montreal and New Glasgow Co. have made some explorations in the seam formerly opened by Mr. Kirby. A slope has been driven from the crop 130 feet: in consequence, however, of the disturbed character of the strata in this part of the coal-field, and the very irregular thickness of the seam, operations have been discontinued. The returns show an expenditure as follows:—

Slope.....	.....
Machinery.....	.....
Prospecting.....	.....
Total	<u>\$</u>

Whilst the results at the two last-named collieries are somewhat discouraging to the respective Companies, there is yet much to be hoped from the careful personal examination of the locality by Sir Wm. Logan, the director of the geological survey now being made of the Pictou coal-field. The importance of this survey cannot be too highly estimated. The explorations on the east side of the East River have hitherto, in most instances, been so detached, that much difficulty is experienced in arriving at any conclusion as to the general shape of this portion of the coal-field; and it is only by experienced observation and careful measurement that any approach to a truthful representation of its peculiarities can be made. The eminent abilities of Sir W. Logan fully justify the expectation that this difficulty will shortly cease to exist, and that future openings will be made with a greater amount of certainty.

The only other operations in the County have been at Sutherland's River, on the area held by Mr. Barton, by whom some explorations have been made, and an expenditure returned 0 —

Adits and Levels..	\$100 00
Prospecting.....	1000 00
Total	<u>\$1100 00</u>

ANTIGONISH.

The operations begun in this County last year by Messrs. McKinnon and Chisholm have been continued, but they are still of a preparatory character only. A tunnel or drift has been driven into the face of a hill for the purpose of cutting the seam at a lower depth, and other steps are being taken to place the mine in working order. The returns shew an expenditure on—

Adits and Levels	\$678 50
Drains, &c.....	4 00
Total.....	<u>\$682 50</u>

CAPE BRETON.

The mining operations in Cape Breton have been characterized by the same comparative inaction that has prevailed in other districts, although other causes, to which I will hereafter refer, have had some effect in diminishing the produce at some of the mines.

In the County of Inverness, mining has been nearly altogether suspended. In the quarter ending December 31st, 1867, a few tons of coal were raised at the

PORT HOOD

colliery, but nothing has been done since; the pumping-engine has, however, been occasionally in use, and the mine kept open. An expenditure is returned of—

Adits and Levels.....	\$354 00
-----------------------	----------

Explorations have recently been made on an area adjoining the Port Hood mine, by Mr. J. P. Lawson. The position of the seam, which is the same as that at Port Hood, has been proved at different places; and other preparations have been made for commencing operations. The expenditure is stated to be \$250.

Neither at Mabou nor Broad Cove have any further steps been taken to open the seams at those places. At

CHIMNEY CORNER,

the operations have also been on a small scale. No further work has been done in the seam first opened: but a drift has been driven 60

yards into an outlying seam, the thickness of which is 3 feet 6 inches, and a few working places have been turned out of it. The returns give an expenditure on—

Adits and Levels.....	\$124 65
Houses.....	315 00
Prospecting.....	81 00
Total.....	<u>\$520 65</u>

In Inverness County, the two mines opened have been partially worked. At

NEW CAMPBELLTOWN,

the operations have been in the vertical seams, and principally in the 4 feet one ; the west level, in which has been extended a short distance further in that direction, and the coal worked on the same principle as was practised last year. Nothing has been done in the slope seam, the workings in which are now filled with water.

The following is the expenditure, as per returns:—

Adits and Levels.....	\$212 00
Prospecting.....	120 00
Total.....	<u>\$332 00</u>

BLACK ROCK.

Little has been done during the year to further develope this mine, which was opened last year by Mr. Ross. The slope has been continued to the dip a short distance, and a few working places turned out of it. The operations are still, however, of very limited extent. An expenditure is returned of—

Adits and Levels.....	\$254 00
Drains &c.....	20 00
Total.....	<u>\$274 00</u>

On the Little Bras d'Or, the Matheson and Collins mines have been worked during a part of the year only. At the

MATHESON

colliery, operations were carried on, to a small extent, up to June, when they were discontinued. The workings are, in consequence, very slightly extended. The returns show an expenditure as follows:—

Sundries.....	\$100 00
---------------	----------

The

COLLINS

mine has been worked more regularly during the year, though the quantity of coal raised is still small. In the workings there is little change: the coal is brought out by the slope as formerly; nothing further having been done towards preparing the shaft for hoisting, which was sunk in 1866.

The expenditure is stated in the returns to be—

Drains &c.....	\$70 00
Machinery.....	400 00
Total.....	<hr/> \$470 00

SYDNEY.

This colliery is one of the few at which the sales of coal exceed those of last year. Mining has been confined entirely to the Main seam, the workings in which have been extended in the various districts of the mine. Those in the Lloyd's Cove district, under the sea, are being regularly carried on, and present no change in any respect. In other parts of the mine a similar uniformity prevails, the workings being carried on with great regularity and in a systematic form, that offers nothing for special remark. In one of the northern districts, the removal of the pillars has been begun, and, so far, very successfully accomplished. As the operation has not been attended with any difficulty or impediment, it is intended to continue it: it is a very important one in relation to the economical working of the mine, taking into consideration the distance of the working-places from the shaft, and other matters in relation therewith.

The progress of the new works has been somewhat delayed, in consequence of a heavy feeder of water having been met with in the shafts in the early part of the year. After unsuccessfully attempting to overcome it with the existing means, it was determined to suspend the sinking operations until the powerful pumping-engine, in course of erection, could be applied. The massive character of the structure required for this engine has occupied in its erection the time that has elapsed since such stoppage; and although the work has been steadily carried on, much remains to be done before the engine can be placed in position and the sinking of the shafts resumed. Meantime, the railway between the Queen pit and Sydney harbor is being extended to these new works, and other arrangements are being made to enable them to be brought into active operation as soon as the shafts are completed.

The expenditure is stated in the returns to be as follows :—

Shafts.....	\$9538 06
Railway, Engine houses, &c.....	9632 59
Machinery	39400 00
Total.....	<u>\$58570 65</u>

INGRAHAM.

A few tons of coal were taken out of this mine at the commencement of the year ; but operations have since been entirely suspended, and the workings are now filled with water.

VICTORIA.

The operations at this colliery consist principally of an extension of the slope to the dip ; it has now been driven 400 feet. It has been found necessary, however, to cease working until a more efficient means of hoisting and pumping is provided ; the engine hitherto used for these purposes being too light. The erection of a more powerful one has, therefore, been begun, and other preparations are being made to place the mine in a more effective condition. A temporary railway, about a quarter of a mile in length, has been constructed, and connected with a wharf from which the coal will be shipped until the completion of a railway between the mine and the wharf at the South bar.

This following is the expenditure, as per returns :—

Slopes	\$2077 00
Adits and Levels.....	1450 00
Drains, Engine erections &c.....	4033 73
Machinery	4000 00
Horses	500 00
Total.....	<u>\$12060 73</u>

LINGAN.

The sale of coal from this colliery, in comparison with that in former years, is a sufficient indication of the greatly-reduced extent of the operations during the past year. The workings are, in consequence, little altered in position, and present nothing that requires particular remark. They have been principally to the dip, and in the old pillars between the upper level and the crop ; these have been effectually worked, and a considerable space is now formed, from which the coal has been entirely removed.

At the Barasois, the mining operations were discontinued early in the year, until means were provided for contending with the feeders of

water met with in the slope. A steam-engine, to hoist and pump, is now in course of erection, and other steps are being taken to open out the seam. The expenditure is stated in the returns as follows:—

Adits and Levels	\$2619 97
Drains, Engine erections, &c.....	5388 85
Machinery.....	2765 41
Houses.....	1921 95
Total.....	<u>\$12696 18</u>

INTERNATIONAL.

A similar inactivity to that which has existed at Lingan has prevailed at this colliery. The working of the mine was discontinued in April, and was not resumed until August. In October, operations were again suspended, and the mine is at present unworked. The extension of the workings has been chiefly in the direction of the levels; they exhibit no change of importance. In every other respect the works are unaltered. An expenditure is returned as follows:—

Adits and Levels.....	\$303 65
Drains, &c	61 94
Machinery.....	250 00
Total.....	<u>\$618 59</u>

CALEDONIA.

The equipment of this colliery for extensive operations has, during the year, been fully completed, and it is now in a position to produce a large yield of coal. The seam has been well opened by levels on each side of the shaft; the west one having been driven 300 yards, and the east one 230 yards, out of each of which working places have been turned. A pair of drifts have also been driven to the rise which it is intended to connect with a shaft about to be sunk for the purpose of ventilation.

The works at the harbor have also progressed to an extent to enable shipments to be made, and are generally in a position to allow of an extension of their capabilities whenever required.

The returns give the following expenditure:—

Shafts	\$57 06
Drains, and other surface work	1328 72
Machinery	11118 00
Houses.....	944 01
Boring.....	49 15
Railway.....	6342 87
Harbor.....	23317 11
Total.....	<u>\$43156 86</u>

LITTLE GLACE BAY.

The production of coal at this mine, it will be observed, is very much less than that of last year. The general state of the trade has, of course, been felt in this district as elsewhere; yet it is to be regretted that an additional cause has assisted to reduce the usual large yield at this colliery. A strike of the miners, in the early part of the year, prevented the mines being worked for several weeks, and so much disarranged the course of business, that operations were considerably curtailed. These have been carried on in both of the seams generally worked. In the Hub seam, they have been altogether in connection with the new workings begun last year, which have been extended principally in a northerly direction. Levels have also been driven southward, but the workings in that direction have not been regularly carried on during the year. Another shaft has been sunk to this seam, near, and to the dip of, the present hoisting-shaft: it is intended for pumping only.

In the Harbor seam, the operations have been of a similar character to those in the Hub seam; the workings being little increased in extent, and presenting no new feature worthy of note. The expenditure is stated in the returns to be, on—

Shafts.....	\$3476 32
Adits and Levels.....	3250 62
Drains, &c.....	1496 26
Machinery.....	536 00
Houses.....	517 49
Harbor.....	1017 63
Total.....	<u>\$10294 32</u>

CLYDE.

Mining has been renewed at this colliery; the operations are still, however, on a small scale, and are not carried on with regularity. A few cargoes of coal have been shipped, but more efficient means of putting on board must be provided before much extension of the operations can be made. The little that has been done in the mine, has been in the upper level; a few bords in connection with which have been worked. The workings in the lower level are filled with water. An expenditure is returned of—

Adits and Levels.....	\$49 00
-----------------------	---------

SCHOONER POND.

A few tons of coal have recently been worked at this mine; but regular operations have not been resumed, and the mine is in the same condition as reported last year.

BLOCK HOUSE.

The operations at this colliery have been on a similarly-reduced scale to those at the other mines in this district: they have, too unfortunately, been interrupted by the miners striking on two occasions—one of which was of a month's duration, and the other, which occurred about the same time as that at Glace Bay, caused a suspension of the works for two months. Mining has been regularly pursued since the resumption of work: the extension of the workings is, however, slight as compared with former years. The different districts of the mine have been worked in the accustomed manner; and in none of the arrangements, either above or underground, is there any change of importance.

The expenditure, as per returns, is as follows:—

Drains, and other surface work.....	\$1926 31
Machinery.....	4702 02
Houses.....	4498 50

Total.....\$11026 83

GOWRIE.

This colliery and the Sydney are the only exceptions, among those of a few years' standing in this country, to the general diminution in the yield of coal during the year. The production exceeds that of last year 13,564 tons—a result which certainly reflects credit on the enterprising owners.

The workings in the mine have been extended on each side of the shafts: operations in both the east and west levels having been carried on, the bords out of each being in various stages of progress towards the upper workings.

The shipping facilities in connection with this mine have been increased during the year: the wharf has been extended 230 feet, and additional loading-berths provided. The security of the wharf has also been considerably increased by an extension of the breakwater, the length of which is now 1344 feet. This very important work, by which the dangers of the exposed roadstead will be so much lessened, is being gradually strengthened and protected in a manner that will add very materially to its permanency.

The expenditure is stated in the returns to be—

Shafts.....	\$570 00
Adits and Levels.....	366 00
Drains &c.....	440 00
Machinery.....	1490 00
Houses.....	2550 00
Shipping Wharf.....	4200 00
Breakwater.....	20925 00

Total\$30541 00

SOUTH HEAD.

Considerable progress has been made at this mine, in placing it in a more effective condition: the railway, which was begun last year, has been completed, and a shipping-wharf erected in connection with it: it is about a quarter of a mile in length.

In the mine, which has been only partially worked during the year, the operations are still of small extent. The south level has been driven a short distance farther, and working-places have been turned out of it; a drift has also been driven to the dip 90 yards on the north side of the shaft, and preparations are being made for further extending the operations.

The expenditure is returned as follows:—

Adits and Levels.....	\$1456 81
Drains, Railway, &c.....	12834 99
Machinery.....	2616 25
Houses.....	339 73

Total.....\$17247 78

The only other mine in this locality is the Mira Bay, which is still unworked, and is now filled with water.

It was scarcely to be expected, under the circumstances of the trade that fresh openings would be made, yet in the course of the year operations have been begun on two seams that have been discovered in different localities. On one of these, the crop of which is near the head of Lingan basin, and on a area belonging to Messrs. Moseley and Brookman, shafts have been sunk, and the seam partially opened. Beyond the proving of the seam, however, the thickness of which is 4 feet, nothing further has been done, and operations are at present suspended. The other seam is on the mining property of Messrs. McInnes and Le Gras, situated a short distance from the town of Sydney. It is a thin seam, being only 2 feet in thickness, inclusive of 7 inches of clay bands. A slope has been driven from the crop 100 feet, and coal is being taken out for land-sale purposes.

Explorations have also been continued by the New York and Cape Breton Coal Co. on the area adjoining the Gowrie mine on the west, and an expenditure is returned of \$1224.18; and Mr. Jno. Lorway has very recently discovered two seams on his area at Bridgeport. Messrs. Archibald have also begun to work a seam on their area, near Big Glace Bay.

RICHMOND COUNTY.

Neither of the collieries situated in this County, viz., the Richmond and the Sea Coal Bay, has been in operation during the year: at the latter, nothing has been done for some time, and both are now filled with water.

GOLD MINES.

The gold mining operations exhibit, in their produce during the last year, one of those fluctuations which are not unusual in this branch of mining. The decrease in the yield may, to some extent, be attributed to a diminution in some of the lodes at a few of the mines; other causes have also, however, been in operation, which have not been without their effect. One of these, and the most important one, I will endeavour to explain.

The depth at which the lodes, in many instances, are now worked, necessarily involves the adoption of other means than manual or horse labor to contend with an increase of water in the mines, and to hoist the quartz or other material from the depth required. The additional outlay required for this purpose is often deferred until the yield of gold is almost balanced by the cost of production, and a somewhat disheartening result is the consequence. An earlier provision of machinery would probably, in many cases, have placed mines that are now worked to a small extent only, in a position more in accordance with their intrinsic value. This is the case with several mines in various localities, and it has undoubtedly contributed to the diminution in the yield. Notwithstanding this circumstance, however, the aspect of the operations in gold mining is certainly the reverse of depressing; several new districts are being rapidly developed, the establishment of works by Companies of recent incorporation is being carried to completion, and there is every prospect of the operations in a short time being very considerably extended. The application of machinery in lieu of horses and manual labor, the importance of which, in an

economical point of view, is becoming more generally recognised, the enlarged extent of the separate holdings, and the consequent probability of greater duration, together with the adoption of every scientific aid in treating and abstracting the precious metal, are the best assurance that the gold mining in the Province is yet far from that development which, from the extent of the auriferous formation, may be expected.

OVENS.

The operations in this district have not progressed with the steadiness essential to its re-establishment as a gold-yielding locality. With the exception of the working, for a short time in the early part of the year, of the lodes opened by Messrs. Fairfield and others, the mining has been mostly of an exploratory character. Some lodes have been opened by Mr. Drew, and worked to a slight extent, but they are still in an undeveloped form; he has also erected a smelting-furnace and other machinery, which are not yet, however, in working order.

Recent explorations at Indian Path, situated a short distance from the Ovens, have resulted in the discovery, by the Messrs. Waddilow, of several lodes, on one of which operations are being carried on. A shaft has been sunk on it 25 feet, and levels have been driven on each side; others are also being sunk on the lode at various points.

Lodes have also been discovered by Messrs. Hall, King and others. At Gold River, the operations begun last year by Col. Briscoe have, for some time, been suspended; and, with the exception of a little prospecting by various parties, no mining has been carried on in this locality during the year.

RENFREW.

The principal mining in this district has been by the Ophir Co., whose operations are carried on with much energy and regularity. On the north lode, the No. 5 shaft, in which are placed the pumps, is now 250 feet in depth: the adjoining shaft on the west is 205 feet, and the others—ranging east from No. 5 to No. 1—are various depths. The lode has been worked chiefly between Nos. 3 and 5 shafts—a length of working, by underhand sloping, of about 350 feet, including 34 feet on the west side of No. 6 shaft. This extent of opening is being regularly carried down, the No. 5 shaft being kept in advance for the purpose of drainage, and the mine arranged in steps on each side.

On the south lode, in which there are also 6 shafts, a precisely similar system of working is pursued: the No. 5 shaft is now 260 feet

deep. About 400 feet of working space, extending from No. 3 shaft to No. 6, the depths of which are 215 and 220 feet respectively, is being mined. At a depth of 100 feet in both the north and the south lodes, and near to No. 4 shaft, a cross-cut has been begun to the north, for the purpose of exploring in that direction. Another lode—the McClure—lying about 80 feet to the south of the South lode, has been opened during the year; four shafts have been sunk on it, the deepest—No. 2—being now upwards of 70 feet. From this depth the lode has been stoped to the surface, 100 feet to the east and 200 to the west. A steam-engine, of the same size as the one on the North lode, has recently been erected, and applied to hoist and pump from the McClure and South lodes. The Co. have also worked the Brook lode, on which two shafts were sunk last year: these have not been sunk deeper, but between them the lode has been stoped 55 feet in height from the depth of No. 2 shaft, 88 feet: and from the bottom of No. 1, 92 feet, a tunnel has been driven to the west 80 feet.

West of the Ophir Co's shafts, on the North lode, are those of the Hartford Co.; they are three in number, and are each about 150 feet deep. Mining has not, however, been regularly carried on in them; little having been done prior to September: the stoping now extends between the shafts and 40 feet west of the west shaft, from their depth to the surface.

A shaft has been sunk on the South lode by the Colonial Co.—the successors of the Hartford Co.—on the property formerly held by the New York and Renfrew Co. This shaft is 66 feet deep, and out of it a tunnel has been driven to the west 80 feet, and to the east 50 feet. In the west tunnel, a single height of stoping—6 feet—has been taken down the length of the tunnel; and in the east tunnel, 12 feet in height along its length.

On the McLeod lode, this Co. have also a shaft, the depth of which is 45 feet; on the west side of the shaft, the lode has been stoped a distance of 40 feet, and to the surface, from a depth of 20 feet.

The operations on the Free claim, by the same Co., have not been regular: no mining having been carried on during a portion of the year; a few months ago they were resumed on one of the many lodes that have been opened on that claim. A shaft, which had reached a depth of 100 feet, is being continued: 20 feet in length on the lode being carried on. The lode has been stoped to the surface from the depth of the shaft, a distance of 80 feet to the east, and the same height, 15 feet to the west.

The Co. have recently opened another lode—the Philips—lying about 100 feet north of the McLeod lode ; it is 9 inches thick ; a shaft has been sunk on it 25 feet.

The only other mine that has been worked in the district is on the lode opened last year by Mr. Andrews, by whom a shaft has been sunk to a depth of 90 feet. At a depth of 75 feet, a tunnel was driven to the east 20 feet, and the lode stoped the additional depth. Operations are at present suspended.

OLDHAM.

This district has continued in comparative inaction during the greater part of the year : the principal operations having been carried on by Mr. Shaffer, by whom the barrel-quartz has been chiefly mined. Additional openings have been made, at one of which the lode has been mined to a depth of 70 feet from the surface, a length of working being carried down of about 120 feet ; at the others, it has been stoped to a depth of 40 feet. Openings have also recently been made near these operations by Mr. Bunker, who has begun three shafts. In addition to these, the Ohio lode, on which mining has not been carried on for some time, has, within the last few months, been reopened by Messrs. Fraser and McBean, who have begun to work it on one of the old shafts, the depth of which is 50 feet. The same lode is also being sunk upon, a little further to the west, by Mr. Donaldson.

WAVERLEY.

The operations in this district are still on a reduced scale, in comparison with those of former years. The lodes that have been chiefly worked are the Tudor, Brodie, No. 6 and Taylor, by the Boston and Nova Scotia Co., Messrs. DeWolf & Co., and Mr. Burkner. On the Tudor lode, the main or pumping shaft, on the Lake Major property, is now 325 feet deep ; and on the Brodie lode, the deepest is 220 feet. The mining has been carried on in the usual form : little, however, has been done during the last six months.

The Boston and Nova Scotia Co. have mined the No. 6 lode, the No. 3 shaft, on which is now 361 feet deep ; 36 feet having been sunk during the year. A length of stope of 124 feet has been worked on the east side of this shaft ; operations in it have, however, been discontinued. The same Co. have partially worked the North Tudor lode, on the east side of the East shaft. On the North lode, two shafts have been in operation ; one of these is sunk to a depth of 80 feet, and tunnels driven out of it, east and west, 30 feet : above these

tunnels, the lode has been stoped 60 feet. The working of this lode has also been discontinued. The west shaft, on the same lode, has been sunk 25 feet further, making it 105 feet: the stoping has been carried down 20 feet on each side, the length of the tunnels driven east and west at a depth of 80 feet. Latterly, the operations have been confined to a removal of the quartz above these tunnels.

Mr. Burkner's operations have been chiefly of an exploratory character—little having been done on the lodes usually mined by him.

MONTAGU.

The only operations of any moment in this district have been on the lode worked by the Union Co., and now owned by the Montagu Co., on which eight shafts have been in use. Between these shafts the lode has been mined by underhand stoping, and it is now entirely removed from the surface to the depths of the shafts, the deepest of which is 143 feet—the east one being 125 feet, and the west one 73 feet. The length of the stoping now carried down is 366 feet, including 27 feet of drifting at the west end, and 45 feet at the east end. An engine has been applied to hoist and pump at the deepest shaft, and the operations generally show a marked improvement. Nothing has been done during the year on the South or Werner lode; but mining has been recently begun again upon it. Preparations are also being made to reopen the mines formerly worked by the Albion Co.

TANGIER.

Mining in this district has not been carried on with the regularity and vigor which the operations in 1867, seemed to promise. Mr. Forrest has continued to work the different lodes opened by him on Strawberry Hill. On the Forrest lode, the thickness of which is 3 inches, four shafts have been in use, the deepest of which is 120 feet: a length of stoping of 160 feet is being carried down between these shafts. Three shafts have also been worked on the Dunbrack lode, 9 inches thick: their depth is 45 feet. The lode is being mined by underhand stoping: a length of 170 feet being carried down. In addition to these operations, a tunnel has been driven 200 feet, and the Wallace lodes cut at a depth of 40 feet from the surface.

At Old Tangier or Mooseland, the Beneficiary Co. Messrs. Adams

and partners, continued their operations a short time during the first half of the year : principally on the Adams lode. Other lodes were also opened but not mined to any extent. All operations have however been discontinued for some time.

Messrs. Barton, Estey and others have carried on exploratory operations, and discovered several lodes, but no actual mining has yet been begun.

SHERBROOKE.

This district maintains its position as one of the most extensively worked in the Province. In most of the mines, operations have been steadily pursued during the greater part of the year. In those of older establishments, they have consisted of the regular extension of the mine in the ordinary manner ; they present no new features of any moment. On the Cumminger lode, the Wellington Co. have now one of their shafts 280 feet deep, from which depth the lode has been stoped through to the adjoining shaft on the east 250 feet, and 100 feet to the west. At a depth of 200 feet in the deep shaft, a tunnel has been driven to the west, and two shafts are being sunk to it. This Co. have also two shafts going on the Dewar lode 5 ins. thick, and about 100 feet to the north of the Cumminger ; these shafts are 30 feet deep. East of the shafts, the lode has been worked by open trench : it is stoped between the shafts to within 6 feet of the surface.

On the Hayden and Derby lode, the hoisting-shaft on which is now 110 feet deep, two veins have been mined, their distance apart being 8 feet ; the north one is 2 ins. thick, and the south one 8 ins. The former of these has been principally worked—a tunnel connecting it with the shaft. Out of this tunnel it has been worked to the west 60 feet, and stoped to a height of 35 feet ; operations were, however, suspended a short time ago, and openings begun on some lodes lying to the north of it.

The New York and Sherbrooke Co. continued their operations on the lode worked by them until October, when they were discontinued. A considerable quantity of water is met with in this mine, and the existing means of getting it out are found to be both insufficient and expensive. It is one of those cases in which the application of machinery will, no doubt, be a benefit.

About 200 yards to the south of these operations, others have

been begun by the Delta and Crescent Cos.: the former have opened a lode, the aggregate thickness of which is 3 feet, consisting of 18 inches of quartz and 18 inches of slate and quartz, mixed. A shaft is being sunk upon it, which is now upwards of 30 feet deep. Another shaft is also being sunk a little further to the south; this shaft appears to be situated near a bend in the strike of the lodes, which show here a westerly dip; it is not sunk on the lode, but is placed in advance of the crop, and is expected to reach the lode at a depth of 50 feet.

On the adjoining property, the Crescent Co. have three shafts going: one of these, the northernmost, is in a similar position to that last named, and is being sunk to the same lode. About 147 ft. to the south is the second shaft, which is now upwards of 30 feet in depth; the third shaft is also being sunk in a vertical position, and has reached a lode of 4 feet 9 inches thick, at a depth of 28 feet.

The Dominion Co's operations have been principally on the Palmerston lode; the depth of the shaft worked being now over 120 feet. A number of veins forming an aggregate thickness of 20 feet, is worked at this shaft; this width, and an extent of 80 feet, being 30 feet on the west side of the shaft, and 50 feet on the east side, is taken out as the shaft is sunk, on the underhand stoping principle. The Hewitt lode was also worked for a short time in the early part of the year by this Co.

The Palmerston lode has also been worked by the Palmerston Co. during the greater part of the year; the operations being of the usual character. They have also sunk two shafts on a lode lying to the north of the Palmerston, about 100 feet: the west shaft has been sunk 60 feet, and a tunnel driven 20 feet to the west; on the east side, a tunnel has been driven 96 feet and connected with the other shaft, beyond which it has been continued. The east tunnel is at a depth of 19 feet from the surface, and the lode has been stoped, from a depth of 28 feet, 30 feet to the east, and to the height of the tunnel.

The Metropolitan Co's operations on the Palmerston lode have been of very limited extent: they have, however, begun others, consisting of the sinking of two shafts, one of which is on the Archibald lode, 12 inches thick, and about 20 feet south of the Palmerston; the other is on the Hewitt lode, further south. These shafts are now over 20 feet and 60 feet, respectively, in depth.

Out of that, on the Hewitt lode, a cross-cut has been driven to the Palmerston lode, and, from this cross-cut, tunnels are being driven east and west in the Archibald lode. A cross-cut is also being driven to the south, out of the same shaft.

Eastward of the preceding, the following new Companies have begun, and are carrying on operations :

The Kingston and Sherbrooke Co. have a shaft going on the Cumminger lode, about 200 yards to the east of the No. 1 shaft of the Wellington Co. ; this shaft has been sunk upwards of 35 feet. Eighty feet north of it another shaft is being sunk on the Dewar lode, the thickness of which is from 4 to 5 inches, which has reached the same depth. They have also two shafts, on lodes, lying considerably to the south of this part of their property : one of these has been sunk 60 feet on a 12-inch lode, and the other 40 feet on a 10-inch lode.

On the Meridian Co's property, lying to the south of the above, five shafts are being put down on different lodes, only one of which is supposed to have been worked in the mines to the westward. The northernmost shaft is on the Sears lode, the thickness of which is 8 inches, with 8 inches of slate on each side ; it is now 60 feet deep, and tunnels have been driven out of it at that depth on each side. Fifty feet to the south of this lode is another, on which a shaft is also being sunk. This lode consist of three veins in a thickness of $3\frac{1}{2}$ feet the veins being 1, 2, and 3 inches thick with slate between. Farther south about 80 feet, a shaft is going on a lode 2 inches thick : and still further south 120 feet, one on a lode composed also of three veins, the south one of which is 7 inches, the centre 1 inch, and the north one 4 inches thick : the walls being $4\frac{1}{2}$ feet apart.

Adjoining the Meridian Co. on the east is the property of the Chicago Co. by whom six shafts are in course of sinking on different lodes, all of which have been recently begun and are in various stages of progress. The operations of the Canada Co. are also in the same position : one of their shafts, the northernmost, being sunk 50 feet on the Dr. Hea lode : 200 feet south of which, a shaft has been sunk on a lode of three veins, 3, 6 and 13 inches in thickness, with slate and quartz intermixed : the walls being 6 feet apart. On the same lode, and 40 feet to the west another shaft has been begun : and one further south on a 5 inch lode. The lodes in this locality are nearly vertical.

By the Wentworth Co. similar openings are being made on various

parts of their property : their northernmost shaft is on a 22 inch lode, and has been sunk 40 feet. About 200 feet south two shafts are going on the Ferguson lode, the west one of which is 50 feet, and the east one 25 feet ; and further south 70 feet, another has been sunk 40 feet. On an adjoining property to the north the Coburg Co. have a shaft, the depth of which is above 60 feet, on a lode from 12 to 14 inches in thickness. The Caledonia and Woodbine Co's. properties lying to the east of the above, are in a similar state of development. The former Co. have sunk a shaft 53 feet on a lode varying from 28 to 35 inches in thickness ; and the latter have three shafts on the Woodbine lode, the deepest of which is 75 feet. Out of the west shaft at a depth of 70 feet a crosscut has been driven to a lode lying 15 feet to the north of the Woodbine ; on which a shaft has also been sunk 53 feet. A steam engine is applied to hoist and pump at these three shafts and the arrangement generally appears to be very effective. Further north of the last named lode, about 140 deep, the same Co. have a shaft 40 deep, on another lode composed of four veins.

The operations on all these properties have been begun during the past year, and their progress is indicative of the energy with which mining enterprise is being carried on in this now largely extended district. I may add that three of the Companies viz.: the Meridian, the Wentworth and the Canada have erected crushing mills of 15 stamps each. The Wellington Co. have also finished a new mill.

In connection with this locality is the Cochran Hill district in which explorations have been made during the year. Several lodes have been discovered, and on one of them a shaft is being sunk by Messrs. Cumming and others : the other operations are principally of an exploratory character.

WINE HARBOR.

The operations in this locality have not during the year been of so prominent a character as might have been expected considering the energy with which the new works were begun last year. Fresh openings have however been made which are being steadily carried on. The Orient Co. have worked the Ranke lode at the Barasois, but not to any extent, and operations on it were suspended a short time ago. On the Eureka lode, the Eureka Co. have sunk two shafts, the east one being about 100 feet deep and the west one 50 feet ; the lode is from 4 to 10 inches thick. A tunnel has been driven between these shafts at a depth of 50 feet, and a crosscut is being driven to the south

out of the east shaft. Sixty feet south of this lode, another, the McDonald, has been sunk on, to the depth of 30 feet. In the Provincial Co's. mines, formerly the Caledonia and Glenelg Companies', the Hattie lode has been partially worked, but chiefly on the east side of the east shaft. The Co. have recently sunk a shaft on a lode lying to the north of the "Hattie," 18 feet: this shaft is about 200 yards west of the Caledonia shafts, and is upwards of 60 feet deep. At a depth of 30 feet in it, a crosscut is being driven to the north for the purpose of exploring in that direction.

The Eldorado Co. have extended their operations, and in addition to the tunnel, which is now 440 feet in length, they have sunk a shaft on a lode, supposed to be the Hattie: it is situated about 150 yards to the west of the tunnel, a shaft has also been sunk by the side of the tunnel, 40 feet in depth and about 240 feet back from the face, and has been fitted up for hoisting: a small steam engine being applied for this purpose. The work in this tunnel is being pushed with much vigor: in order to expedite its completion a machine for boring the holes for blasting has been recently introduced, and its application is expected to produce very satisfactory results.

The only other new operation in this district has been begun by Mr. McIntosh, who is sinking a shaft on a lode considerably to the west of these older operations.

STORMONT.

Almost only themining that has been done at Isaac's Hb. has been by the Mulgrave Co. who now own the Gallagher property. Their operations have been of the ordinary character: the stoping of the lode being regularly and systematically carried on between the different shafts. The sinking of the West or No. 1 shaft is being continued: it is now upwards of 250 feet in depth. This shaft has been sunk through what may be termed barren ground i. e. non-auriferous quartz: and is being carried on with the hope of reaching at a short distance farther, the shoot or streak of auriferous quartz which has been mined in the eastern shafts near its crop.

On the Victoria lode formerly worked by the Isaac's Harbor Co. operations have been discontinued since the early part of the year. The destruction of their crushing mill by fire at that time caused a suspension of work, and the mine has since remained inoperative.

At Seal Harbor prospecting has been vigorously carried on and there is reason to expect that lodes will shortly be opened and mining regularly pursued.

Operations, chiefly of an exploratory character, have also been carried on at Country Harbor, and appearances there are likewise indicative of permanence.

LAWRENCETOWN.

Mining has not been so actively followed up in this district as the preparations in the early part of the year seemed to betoken. On the Townsend property, operations were early suspended, and have not been resumed. Mr. Werner has continued the opening out of his property: on the Nickey lode the west shaft is now 65 feet deep, and the two on the east of it, 50 and 40 feet respectively. From the west shaft the lode has been stoped to the west 44 feet in length and a height of 40 feet in the shaft, but reduced to 20 feet in the face: the stoping has also been carried a similar height between the west and the middle shafts; the thickness of the lode is now 2 feet. North of this lode a few yards, a shaft has been sunk 54 feet on the Mispickel lode, the thickness of which is $3\frac{1}{2}$ feet; no tunnelling or stoping has been done in this shaft. A short distance farther north another shaft has been sunk on the Shaw lode, which consists of two veins, 18 inches and 5 inches thick, separated by quartzite: this shaft is 55 feet deep, and out of it at that depth, the lode has been stoped 12 feet on each side and 15 feet in height.

Explorations have also been continued by Mr. Strange on the east-side of the river, which have not yet however assumed an effective shape. On the west side of Gold Lake he has discovered several lodes, and on one of them a shaft is in course of sinking, which is now upwards of 70 feet in depth.

MOUNT UNIACKE.

The operations in this district have been very considerably extended during the year, and present now an interesting instance of the rapidity with which localities apparently barren and valueless, become centres of industry on the discovery of their mineral wealth. Several new Companies have begun and carried on mining operations, and though in some cases they are still but little advanced beyond a preparatory state, great progress has been made in developing this important district.

The Mount Uniacke Co. have continued to mine the lode opened at

the commencement of their operations, the central shaft on which is now 190 feet deep, and the east and west ones each 150 feet. A steam engine with hoisting and pumping gear has recently been applied at the central shaft. The lode has been stoped between the shafts, and 30 feet to the east of the east shaft to within about 20 feet of the surface. At 110 feet in the middle shaft a cross tunnel has been driven to the south 50 feet into another lode on which a shaft has been sunk to the same depth: this lode has been stoped 50 feet on each side of the shaft from its depth, upwards of 30 feet in height.

The shafts on the south lode have also been sunk further; the west one being 100 feet, the middle 70 feet and the east one 40 feet; from which depths the lode has been stoped to within 15 feet of the surface. On the west side of the west shaft the lode has also been mined by open cutting a depth of 100 feet, a distance of 60 feet. Operations on this lode have however been recently discontinued, and the mining is now carried on only in the other lodes. The Montreal Co's. operations have consisted principally of the opening of a lode to the south of the one worked last year, mining in which was suspended in May last. On this lode, which is distant from the last named 47 feet, and is 10 inches thick, two shafts have been sunk, the depth of the east one being 95 feet, and of the west one 34 feet. It has been stoped out of the east shaft 27 feet to the east, and 25 feet to the west, and nearly to the surface. At a depth of 6 feet in the west shaft, a tunnel has been driven through to the stoping. South of the east shaft, 7 feet, another lode 18 inches thick, has been sunk on to a depth of 35 feet, and the shaft is being continued.

Adjoining the Montreal on the west the Uniacke Central Co. have sunk three shafts on a lode 6 inches thick, the depths of the east and middle ones being 35 feet, and that of the west one 25 feet. The lode has been stoped to the surface between these shafts, and also 20 feet to the east of the east one. A shaft has also been sunk 72 feet on a lode a little to the north of the last named, with which it is connected by a cross tunnel from the west shaft.

By the Prince of Wales Co., whose property is next in a westerly direction, a shaft has been sunk 75 feet on a $5\frac{1}{2}$ inch lode, and out of this shaft at a depth of 51 feet, a tunnel has been driven to the west 23 feet. Shafts have also been sunk, from 15 to 20 feet on other lodes, but mining is at present confined to the $5\frac{1}{2}$ inch lode. The Queen Co. have made considerable progress in the development of their property. Two lodes, one of them being that opened by Messrs. Hall and

McAlister have been mined. On each of these, four shafts have been sunk ; those on the Hall lode being from 65 to 125 feet in depth. Out of the west shaft, and at its depth, 65 feet, tunnels have been driven 17 feet to the west, and 13 feet to the east. The lode has also been stoped, within a few feet of the surface, between the east shafts, and 42 feet to the west thereof. The stoping has also been continued to the eastward of the last shaft, 24 feet, from a depth of 30 feet. The other lode mined by the Co. is situated about 100 feet to the north of the Hall lode : the west shaft in this lode is 30 feet deep, and the other three are 15 feet. Between the two west shafts the lode has been stoped to a depth of 20 feet and the same depth a distance of 30 feet on the east side of the second shaft from the west.

These lodes are very irregular in thickness and vary from a few inches to 5 feet.

The Westlake Co. have three shafts on the lode opened by them, the deepest being upwards of 50 feet ; they are connected by a tunnel from which the lode has been stoped to about 6 feet from the surface. A tunnel has also been driven 20 feet to the west, from the west shaft.

Two shafts have been sunk on a lode by the Imperial Co. the east one of which is 40 feet deep, and the west one 18 feet. From the former tunnels have been driven 50 feet to the west and 25 feet to the east. The lode is nine inches thick.

North of the Queen Co's property, the Brunswick Co. and Messrs. McNab & Co. have commenced operations on two lodes. The Brunswick Company have sunk a shaft 47 feet on a lode about 100 feet north of the Queen Co's south lode, and tunneled to the west 27 feet. Fifty feet further north, they have another shaft 48 feet deep, from which depth a cross tunnel has been driven to the south into the west tunnel out of the south shaft.

Messrs. McNab & Co have a shaft on a lode about 200 feet to the north of the Westlake lode, the depth of which is 50 feet : cross tunnels have been driven from a depth in this shaft of 41 feet, 16 feet to the north and 12 feet to the south.

The lode opened by Mr. Doull on the south of the Central Co's. property has been mined by the Union Co. who have continued the shaft to a depth of 70 feet, and stoped to the west 30 feet from the surface : a little stoping has also been done at the bottom of the

shaft. At present operations are being carried on on a lode 3 feet to the south, the thickness of which is 2 feet. It is being carried down by open work and has been mined to a depth of 12 feet.

Mr. Burkner, whose property adjoins on the east, has also sunk his shaft to a depth of 80 feet. At a depth in this shaft of 15 feet a tunnel was driven to the east and the lode stoped to the surface a distance of thirty feet. Operations have however been discontinued.

By the Lawrence Co a lode has been opened to the north of the Union Co's shaft, and a shaft sunk 40 feet: the lode has been mined by open cutting from the shaft 41 feet to the east.

Explorations have been made by several parties on the areas surrounding the preceding properties, and lodes have been discovered of a more or less promising character. This district is thus being well developed and extended operations will no doubt ensue.

The prospecting operations during the year have been on an extended scale as respects localities.

Whilst they have been continued with more or less vigor at most of the places named in last year's report, others have been explored with, in most cases, satisfactory results. The operations at most of them are still chiefly of an exploratory character, though in some as at Musquodoboit and Fifteen Mile Stream, crushers are being erected, and preparations made for active mining: the lodes in these localities being considered very promising.

ACCIDENTS.

In consequence of the change in the termination of the fiscal year, the following statement is made up to December 31st, in order that it may be in accordance with the other statements appended to the report of the Chief Commissioner of Mines. There have been 15 accidents in the 12 months ending September 30th, and 5 in the three months ending December 31st, making a total of 20 during the 15 months. The mode of occurrence is given in the subjoined summary, and detailed statement.

Whilst the number of persons hurt during the twelve months is nearly fifty per cent less, the proportion of deaths is slightly in excess of last year. Nine of the accidents have occurred from falls of stone, coal, and earth, of which eight were fatal; 3 deaths were caused by explosions of powder; there have been 2 explosions of gas, neither of which however resulted in loss of life; 3 persons were crushed by machinery, causing the death of one of them; and the others were of a miscellaneous character, one of which was fatal.

No.	Date.	Name.	Name of Mine.	Cause.	Result.
	1867.				
1	Oct. 19.	D. Cameron....	Sherbrook	Fall of Stone.....	Died.
2	" 23.	John Bennois....	Sydney....	Explosion of powder.	do.
		James Matheson.	"	do.	Recovered.
3	Nov. 16.	Simon Fraser....	Renfrew ..	Fall of Stone.....	Died.
4	" 28.	Thomas McLeod.	Lingan....	do.	do.
5	Dec. 31.	William Forsyth.	Lawrence's	Fall of earth.....	do.
	1868.				
6	Jan. 7.	Dennis Desmond.	Albion....	Fall of coal.....	Recovered.
7	" 10.	Robert Reid....	Acadia....	Fall of earth.....	Died.
8	April 23.	Angus Currie....	Gowrie ..	Fall of coal.....	do.
9	" 17.	Saml. Hamilton...	Albion....	Explosion of gas....	Recovered.
10	May 22.	John Campbell...	Acadia....	Fall of coal.....	Died.
11	June 23.	Daniel Fraser....	Marsh	Fall of tub in shaft...	Recovered.
12	" 26.	John McCormack.	Sydney..	Explosion of gas....	do.
		John McDonald..	"	do.	do.
		Albert Campbell.	"	do.	do.
13	July 8.	Simon Fraser....	Acadia....	Crushed by cars	Died.
14	August 7.	John Conway..	Aspe Bay	Explosion of powder.	do.
15	Sept. 8.	C. McPherson....	Mulgrave (Isaac's II.)	Fall of stone	do.
16	Oct. 3.	T. McDonald....	"	Fall down shaft.....	Recovered.
17	" 8.	H. McLellan.....	"	Explosion of powder.	Died.....
18	" 22.	W. McIntyre	Sydney....	Crushed by machinery	do.
19	Nov.	John McDonald..	Montagu..	do.	Recovered.
20	Dec. 1.	Joseph Tredinnick	"	do.	do.

No. 1. The death of Cameron was caused by a mass of rock falling upon him whilst engaged in setting timber to secure the hanging wall a short distance below. The rock had been supported by a boom, which he incautiously removed in order to put it in another place, and the rock very soon after came down upon him.

No. 2. This accident occurred under very peculiar circumstances. The two men were employed as sinkers in the new shafts at the Sydney Mines; they had gone down to fire a shot that had been prepared in the pit bottom: the fuse was lighted, and according to the statement of Matheson, Bennois got into the tub and shouted to be drawn up,

and was actually hoisted a short distance before he perceived or remembered that Matheson was not with him. He then shouted for the tub to be lowered, and Matheson was able to get into it, but before it could be raised again from the bottom the blast occurred. Bemis was killed on the spot, and although Matheson was severely injured he ultimately recovered.

The extraordinary act of the unfortunate man, can only be accounted for by the supposition that he had become unnerved and lost all command of himself.

No. 3. This accident occurred at one of the Hartford Mining Co's. mines at Renfrew. Fraser and another man were working in a stope about 7 feet below a scaffold: a portion of the lode had been left on the hanging wall, and they had begun to take it down and had removed some of it, when a large piece of the wall broke off and fell upon Fraser. The mass was found upon examination, to be wedge shaped, the fracture in the rock beginning in a point at the bottom of the stope and thickening to about 18 inches near the scaffold. The removal of the lode at the lower part, appears to have destroyed what attachment there was, the weakness of which was not suspected.

No. 4. McLeod was employed in the Lingan Colliery as a door-keeper. It appears he had left his door for the purpose of having a ride in the empty tubs, one of which on his attempting to get into it had ended up and got off the way: it had then come in contact with the props by the wayside, which were knocked out, and a portion of the roof falling upon him crushed him to death.

No. 5. Forsyth and other two men were prospecting for a lode on Mr. Werner's property at Lawrencetown: they were removing a portion of a sand bank for this purpose and had begun a tunnel when a large mass of it broke away and buried Forsyth. Some time elapsed before he could be got out and life was then quite extinct.

No. 6. This accident was of a singular character. Desmond was a laborer employed at the Albion Mines: he had seated himself beneath the edge of the bank of coal, which was frozen, when a portion of it suddenly fell away and coming upon him, broke both his legs.

No. 7. This accident occurred during the formation by the Acadia Co. of the branch line between their mines and the Nova Scotia railway. Reid with others was engaged in a cutting and was undermining the earth for a fall, when it showed symptoms of coming down: and although a warning cry was given, the sitting posture which he

was in, prevented his escape and he was unfortunately crushed to death.

No. 8. Death was caused in this case by the fall of a large block of coal: Currie was preparing to get it down in the usual way, and had undermined it for this purpose, when it suddenly gave way, and falling upon him, crushed him so severely that he died a few hours after.

No. 9. Hamilton was employed in the new pit at the Albion Mines: during the breakfast hour some gas had accumulated in his working place, which before resuming work he began to brush out: very incautiously however he hung his lamp, a common oil one, at the end of the brattice, and the gas being driven upon it, exploded, and burnt him, but fortunately not very seriously.

No. 10. Campbell and other two men were working in one of the balance ways in the Acadia Mine: the upper part of the seam had been mined and timbers put in to support the roof, their ends being inserted into the solid coal on each side of the place. The lower bench was in course of working, and whilst they were so engaged, a large mass of coal fell off one of the sides, which released the ends of the timbers and four of them with a portion of the roof immediately fell, and killed Campbell on the spot. On examining the side from which the coal had fallen, a lype or glazy fracture of the coal was discovered, from which the mass had fallen away on pressure being thrown on it by the timber.

No. 11. In this case the accident arose from the tub becoming disengaged from the hook whilst being drawn up the shaft at the Piecton Mining Co's. Colliery. Fraser himself had sent the tub away: when about 20 feet up the shaft, it suddenly fell and struck him: breaking his ribs and otherwise severely injuring him. In the absence of any other cause to account for its fall, it is supposed that it had not been properly hooked before being sent away.

No. 12. The circumstances in connection with this case are as follow. The parties named and other two men had gone down to work in their places without the knowledge of those in charge of the mine. The pit was not being worked that day and they went with the intention of getting some coal ready for the next working day: not having any empty tub, McCormack, McDonald and the boy Campbell, the driver of a horse which they got from the horsekeepers, went into some of the other working places to look for some. One of these places had been unworked a short time, and on going into it an explo-

sion occurred fortunately without any serious result to any of them although the boy was severely burnt; the horse however was so injured that it died shortly after.

This accident would not have happened but for the extreme impropriety of the parties in going into the mine without the knowledge of the overman or deputies. I was informed that it was known that there was gas in the place, and that a danger signal was put up at the entrance to warn against entering it; and also that it is not customary to allow the men to go into their places until they have been examined by proper parties.

No. 13. This accident occurred in the following manner: Fraser was engaged at the Acadia Mine: his duty was to start the coal cars with a horse. The one he drove was blind in one eye, and had got into a position in which it was likely to be crushed: seeing this, Fraser ran in before the car to turn the horse out, and in doing so slipped his foot and fell on the rail, and before he could recover himself and get out of the way, the car ran over him and so mutilated him that he died a few hours after.

No. 14. Conway and another man were prospecting for gold, and had prepared a hole for blasting; everything was in readiness, and Conway told his partner to stand back and almost immediately after, the shot went off, killing the poor fellow on the spot. The accident is supposed by his partner to have been caused by his setting fire to the squib when he lighted the match attached to it, and that he had not, therefore, time to get out of the way, which he could have done, had the match only been lighted.

No. 15. McPherson was in the employ of the Mulgrave Mining Company, at Isaacs' Harbor: his duty was to fill the tub at the bottom of one of the shafts and send them up. On this occasion he had put a large piece of rock on the top of the tub, which as the tub was being landed, slipped off and fell upon him: breaking his leg and causing other injuries which resulted in his death a week after.

No. 16. This accident also happened at the Mulgrave Company's Mine: McDonald had occasion to come out from where he was working towards the shaft, and having lost his light, he very incautiously proceeded in the dark, and stepping into the shaft, fell a depth of forty feet: fortunately without any more serious injury than a broken leg.

No. 17. This accident also occurred at the same Mines, and is supposed to have been caused by the scraper, when being used by McLellan, having struck a spark and ignited the powder, which was placed in the hole, loose. He was blown back with such force that he received a wound on the neck from coming in contact with the sharp edge of a piece of rock and bled so much that he very soon expired.

No. 18. McIntyre was employed at the underground engine in the Sydney Mine : his duty was to guide the ropes on the drums ; for this purpose he stood in front of the drums and only a few feet from them, and with a lever directed the course of the ropes as they were wound on the drums. When the accident happened the rope was passing on the underside of the drum on which he was guiding it. In what manner he became entangled can only be conjectured as the engineman did not observe his disappearance at the moment. His attention was however drawn to something unusual on the drum and he immediately inquired what it was ; receiving no answer, he then perceived that it was the body of McIntyre and at once stopped the engine, too late however to save him, the rope having wrapped round his neck and caused instant death.

No. 19. This accident occurred to McDonald whilst cleaning the bed plate of the engine, of which he had charge, at the Montagu mines. His hand was caught by the crank and severely crushed.

No. 20. This also happened at the same mine. Tredinnick, in the absence of the engineman with the light, approached too near to the main belt, and was caught by it and thrown against the engine : he was severely cut on the head and thigh by the fly wheel, and but for the prompt action of the engineman in shutting off the steam, would probably have lost his life.

The manager informed me that he had issued orders prior to the accident, that no one but the driver was to enter the engine room.

In connection with this part of my report, I beg to submit the following remarks. The occurrence of accidents is generally reported by the agents of the mines ; it has not however unfrequently happened that they have only come to my knowledge through the newspapers and that until I have made inquiry no particulars have been furnished.

Shortly after I had entered on my duties as Inspector, I suggested to Mr. Hamilton, the issuing of a circular of which the following is a Copy :

*" Department of Mines, Chief Commissioner's Office,
Halifax, N. S., February 15th, 1866.*

SIR,—

In the event of any accident occurring hereafter in the mines under your management, or in the works pertaining to them, resulting in loss of life, or whereby any person becomes seriously injured, or whereby the mine itself is damaged, or endangered, you will please send a report of the same forthwith to this office, addressed to John Rutherford, Esq., Inspector of Mines: and in such report you are requested to give the particulars of every such accident: and to state what you believe to have been the cause thereof.

Yours, &c.,

P. S. HAMILTON.

Chief Coms'r. of Mines."

To

Copies of the above were sent direct to all the agents of the Coal Mines, and to the Deputy Commissioners for distribution among the agents of the Gold Mines, in their respective districts. A more general compliance with the requirements of this circular is desirable, as it cannot be considered exacting, and a knowledge of the necessity of reporting all accidents is I consider a not unapt, though an indirect help in keeping the attention to every means of avoiding them. In cases resulting in death it is important that a more precise statement of the cause as elicited at a coroner's inquest should be furnished to the Inspector. Could attendance be given at the inquests, as is usual in England, the circumstances of each case would then generally be more clearly ascertained: but the distances which the different mining districts are apart, make this almost impracticable. A perusal of the evidence would however enable the statements of the cause of death to be given with more exact detail, which would I consider be not unserviceable in furthering that most desirable object, the prevention of accidents. A knowledge of the circumstances under which a fatal casualty occurs cannot but induce a care in avoiding a similar result: and the publicity given to them in the reports, must tend to prevent a repetition of such circumstances.

I have the honor to be

Your obedient servant,

JOHN RUTHERFORD,

Inspector of Mines.

The Honble. Robert Robertson,

Chief Commissioner of Mines and Public Works.

TABLES SHEWING THE NUMBER OF GOLD MINES BEING WORKED, THE NUMBER OF MEN ENGAGED IN MINING, THE QUANTITIES OF QUARTZ RAISED AND CRUSHED, WITH AVERAGE YIELD PER TON, AND THE TOTAL YIELD OF GOLD, &C. &C., IN THE VARIOUS GOLD DISTRICTS FOR THE MONTHS OF JULY, AUGUST, AND SEPTEMBER, 1868, AS PER STATISTICAL RETURNS OF THE DEPUTY COMMISSIONERS.

OCTOBER, 1867.

DISTRICTS.	Number of Mines being worked.	Average number of men daily employed in mining	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.		Quartz Crushed		Yield per Ton.		Maximum yield per Ton.		Gold obtained otherwise than from Crusher.		Total yield of Gold.					
						Tons.	Cwt lbs	Tons.	Cwt lbs.	Oz	dwt	Gr	Oz	dwt	Gr	Oz	dwt	Gr	Oz.	dwt	Gr
Stornmont, "Isaac's Harbour."	1	25	..	..	..	30	..	..	..	..	..	..	..	..	..	..	..	..
Wine Harbour	8	109	4	3	1	300	..	144	08	1	00	08	2	10	02	..	146	17	..		
Sherbrooke	12	140	5	5	..	1021	13	1021	13	1	08	21	2	09	14	..	1476	17	22		
Tangier	3	39	4	2	1	101	..	101	..	..	17	20	1	15	20	..	90	10	05
Montagu	1	28	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waverley.	5	131	5	4	1	707	..	707	..	..	08	..	1	08	00	..	283	10	05
Oldham	8	46	5	4	1	104	09	104	09	..	18	12	1	14	10	..	96	10	23		
Renfrew	12	231	5	3	2	512	..	512	..	..	18	08	1	08	12	..	477	15	..
Uniake	12	88	3	3	..	434	..	396	..	..	17	07	2	03	17	..	341	09	02
Unproclaimed and other Districts	1	41	2	1	1	60	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals.....	69	878	36	28	8	3270	02	2986	10	0	19	12	2	10	02	..	2913	8	09		

NOVEMBER.

Stormont, "Isaac's Harbour."	5	25	2	2	2	..	46	..	..	37	15	..	11	13	08	3	03	..	..	..	62	05	..
Wine Harbour	6	60	4	3	1	163	..	..	..	163	..	..	..	03	16	..	13	08	..	..	30	01	19
Sherbrooke	12	142	5	5	..	600	..	..	..	392	10	..	..	11	10	3	02	01	..	..	227	00	12
Tangier	4	39	4	2	2	68	..	..	..	68	..	..	1	10	06	2	06	16	..	..	102	16	..
Montagu	1	28	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waverley	5	131	5	4	1	1073	..	..	..	1073	..	..	..	08	15	..	..	..	..	..	463	08	16
Oldham	7	35	4	3	1	50	..	..	..	50	..	..	..	15	13	1	09	02	..	..	39	04	17
Renfrew	12	231	5	3	2	571	..	..	..	571	..	..	..	13	08	2	02	19	..	..	381	05	10
Uniauke	13	63	3	3	..	258	..	..	..	198	..	..	1	03	04	2	15	00	..	..	229	10	22
Unproclaimed and other Districts	4	42	2	1	1	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	69	796	35	27	8	2904	..	..	..	2553	05	..	..	12	00	3	03	..	..	..	1535	13	..

DECEMBER.

Stormont, "Isaac's Harbour."	2	20	2	2	2	2	..	30	..	..	56	..	..	1	00	00	1	10	..	..	57	05	..
Wine Harbour	8	58	3	5	1	180	..	..	..	..	180	..	..	..	15	16	1	05	02	..	141	01	18
Sherbrooke	10	144	4	5	..	962	05	..	..	..	962	05	..	1	01	22	5	00	..	..	1004	10	08
Tangier	4	39	4	2	2	92	..	..	..	..	92	..	..	1	10	06	1	13	14	50	126	02	16
Montagu	1	28	1	1	..	40	..	..	..	..	30	..	..	..	12	17	..	12	17	..	19	01	19
Waverley	5	132	5	4	1	975	..	..	..	..	975	..	..	..	08	09	..	10	12	..	408	09	12
Oldham	6	19	4	3	1	65	13	..	..	..	65	13	..	..	17	05	1	00	04	..	56	11	09
Renfrew	12	185	5	3	2	482	15	..	..	..	482	15	..	..	15	17	1	00	13	..	378	08	..
Uniake	11	86	3	3	..	190	..	..	..	..	190	10	..	..	18	17	2	04	09	..	177	08	12
Unproclaimed and other Districts	4	42	2	1	1	67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	63	753	34	26	8	3084	13	..	..	..	3034	03	..	..	15	14	5	..	..	50	2368	18	22

Total for Quarter..... 6818 00 07

Oz. Dwt. Gr.

JANUARY, 1868.

Stormont, "Isaac's Harbour"	...	4	32	2	2	2	1	40	..	30	10	..	09 06	..	03 06	..	18	15
Wine Harbour	....	5	55	4	3	5	1	123	14	124	14	..	13 20	..	15 05	..	85	18 18
Sherbrooke	....	10	168	5	5	5	..	600	..	550	..	..	13 12	3	18 19	..	647	01 06
Tangier	...	4	50	4	2	2	2	74	..	74	..	..	19 14	..	19 14	..	72	11 ..
Montagu	....	1	21	1	1	1	1	...	..	...	..	..	07 10	..	10 ..	..	331	13 17
Waverley	....	6	158	5	4	1	1	891	..	891	..	..	04 09	1	07 07	..	24	08 ..
Oldham	....	4	23	4	3	1	20	275	..	20	..	..	15 13	..	19 15	..	207	11 20
Renfrew	....	8	116	5	3	2	2	237	..	266	..	..	01 07	18	09 ..	..	503	03 ..
Uniacke	....	9	85	3	3	..	2	28	..	242	10	..	11 ..	..	12 12	..	15	07 14
Laurencetown	....	2	16	2	..	..	..	..	..	28	..	..	..	..	..	..	..	..
Unproclaimed and other Districts	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	....	53	724	35	26	9	9	2288	14	2226	14	..	17 03	18	..	..	1906	10 03

FEBRUARY.

Stormont, "Isaac's Harbour"	....	4	32	2	2	2	1	97	..	97	..	..	10 12	1	16 ..	..	148	02 ..
Wine Harbour	....	5	45	4	3	5	1	114	12	114	12	..	08 22	..	11 23	..	50	18 11
Sherbrooke	....	10	150	5	5	5	..	800	..	680	10	..	16 12	2	03 09	..	562	09 05
Tangier	...	4	50	4	2	2	2	160	..	160	..	..	13 ..	4	09 09	..	103	17 17
Montagu	....	1	21	1	1	1	1	14	..	14	..	..	09 ..	1	09 ..	..	20	06 22
Waverley	....	6	158	4	3	11	..	621	..	621	..	..	08 12	..	12 14	..	264	10 14
Oldham	....	6	23	4	3	1	48	48	..	48	..	..	19 10	1	08 08	..	46	13 ..
Renfrew	....	10	108	5	3	2	2	253	..	253	..	..	13 14	..	14 02	..	171	16 11
Uniacke	....	7	69	3	3	..	..	261	..	249	..	..	14 04	3	13 02	..	426	09 ..
Laurencetown	....	2	16	2	..	2	2	75	..	75	..	..	09 05	2	11 ..	..	34	12 01
Unproclaimed and other Districts	....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	....	55	672	34	25	9	9	2443	12	2312	02	..	15 18	4	09 09	..	1829	14 09

MAY.

Stormont, "Isaac's Harbour"	5	42	1	1	1	1	21	15	1	10	1	10	11	02
Wine Harbour	5	59	4	3	1	1	350	07	..	..	..	05	262	08
Sherbrooke	11	170	6	6	..	..	857	02	..	16	05	2	694	15
Tangier	2	36	4	3	1	..	47	..	..	14	21	..	35	01
Montagu	1	11	1	1	..	..	..	..	2	03	08	2	26	..
Waverley	5	160	5	4	1	..	711	..	..	07	07	..	259	16
Oldham	2	23	4	3	1	..	58	..	..	12	12	1	36	05
Renfrew	10	115	5	3	2	..	461	..	..	12	17	1	241	09
Uniacke	14	91	3	3	..	..	108	10	..	1	02	12	121	10
Laurencetown	2	27	2	..	2	..	25	..	..	08	..	..	10	03
Unproclaimed and other Districts	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	57	734	35	27	8	..	2651	14	..	12	19	2	1698	11
	..	..	..	..	..	..	07	..	..	03	08	..	..	20

JUNE.

Stormont, "Isaac's Harbour"	4	53	1	1	1	..	200	..	..	..	..	..	..	..
Wine Harbour	4	57	4	3	1	..	224	09	..	01	..	1	224	09
Sherbrooke	13	175	6	6	..	..	636	10	..	09	07	1	296	04
Tangier	2	36	4	3	1	..	63	..	..	14	12	2	108	14
Montagu	3	11	1	1	..	..	..	..	..	05	17	..	..	..
Waverley	5	160	5	4	1	..	835	..	..	..	..	..	239	..
Oldham	2	19	4	3	1	..	65	18	..	15	16	1	54	04
Renfrew	8	116	5	3	2	..	629	..	..	11	18	1	369	06
Uniacke	17	116	3	3	..	..	366	..	..	07	14	3	240	16
Laurencetown	2	27	2	..	2	..	113	..	..	10	12	..	6	06
Unproclaimed and other Districts	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	60	770	35	27	08	..	3216	07	..	11	15	3	1539	01
	..	..	..	..	..	..	..	..	..	08	22	..	..	15

Oz. Dwts. Gr.
 Total for Quarter.....4954 02 14

JULY.

Stormont "Isaac's Harbour" ..	7	54	1	1	1	100	..	..	..	..	..	..	..	..	..	..	..	2	..	..
Wine Harbour	5	121	4	3	1	161	07	..	..	..	..	..	..	..	..	..	..	127	02	16
Sherbrooke	15	250	6	6	..	900	..	..	..	..	..	..	..	..	..	..	..	695	08	05
Tangier	4	24	3	2	1	70	..	..	..	..	..	..	..	..	..	..	..	92	17	..
Montagu	1	20	1	1	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waverley	5	91	4	3	1	538	..	..	..	..	..	..	..	..	..	..	..	132	17	06
Oldham	6	23	4	3	1	50	04	..	..	..	..	..	..	..	..	..	..	63	02	03
Renfrew	12	115	6	3	3	440	10	..	..	..	..	..	..	..	..	..	..	257	05	10
Uniake	21	139	4	4	..	485	15	..	..	..	..	..	..	..	..	..	..	146	00	21
Lawrencetown	2	45	2	2	..	49	..	..	..	..	..	..	..	..	..	..	..	35	02	05
Unproclaimed and other Districts ..	2	2	1	1	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	80	884	36	27	9	2824	16	..	..	..	..	..	..	..	..	..	..	1481	14	22

AUGUST.

Stormont "Isaac's Harbour" ..	7	68	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..
Wine Harbour	5	120	4	3	1	120	18	..	..	..	..	..	..	..	..	..	..	34	05	..
Sherbrooke	15	240	6	6	..	1100	..	..	..	..	..	..	..	..	..	..	..	931	15	06
Tangier	4	33	3	2	1	63	..	..	..	..	..	..	..	..	..	..	..	137	01	16
Montagu	2	22	1	1	..	56	..	..	..	..	..	..	..	..	..	..	..	115	05	..
Waverley	5	91	4	3	1	151	..	..	..	..	..	..	..	..	..	..	..	65	12	03
Oldham	8	30	4	3	1	58	05	..	..	..	..	..	..	..	..	..	..	87	11	17
Renfrew	12	141	6	3	3	463	10	..	..	..	..	..	..	..	..	..	..	237	08	13
Uniake	28	149	4	4	..	463	..	..	..	..	..	..	..	..	..	..	..	189	10	18
Lawrencetown	2	45	2	2	..	80	..	..	..	..	..	..	..	..	..	..	..	50	03	07
Unproclaimed and other Districts ..	2	2	1	1	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	92	944	36	27	9	2560	13	..	..	..	..	..	..	..	..	..	..	1850	13	08

SEPTEMBER.

Stormont, "Isaac's Harbour."	6	62	1	1	130	125	..	1	05	2	..	5	..	160	..
Wine Harbour	6	39	4	3	430	254	10	..	03	..	..	..	..	43	07 21
Sherbrooke	15	231	8	8	830	831	06	..	14	..	..	..	..	637	11 11
Tangier....	4	31	3	2	11	11	..	..	17	12	1	..	..	9	12 ..
Montagu...	2	28	1	1	70	70	..	1	14	10	1	..	..	120	10 ..
Waverley..	5	91	4	3	212	212	..	..	09	12	..	..	..	101	02 08
Oldham....	10	30	4	3	197	197	16	..	05	20	1	..	..	57	03 10
Renfrew....	14	165	6	3	750	680	..	..	08	19	..	..	..	299	03 23
Uniaque....	22	137	4	4	461	283	14	..	17	22	3	..	..	254	07 14
Lawrencetown	2	45	2	1	60	30	17	..	1	00	16	1	..	32	09 12
Unproclaimed and other Districts	2	2	1	1	3	..	..	..	..	..	..	..	..	....	..
Totals....	88	861	38	29	2956	2676	03	..	12	19	3	..	..	1715	08 03

Oz. Dwt. Gr.

Total for Quarter..... 5047 16 05

OCTOBER.

Stormont, "Isaac's Harbour."	7	42	1	1	110	154	..	..	12	00	..	4	..	99	10 ..
Wine Harbour	7	71	4	3	564	564	14	..	122	..	..	..	..	54	09 01
Sherbrooke.	12	200	8	8	725	725	10	..	14	06	7	..	..	517	15 02
Tangier....	5	38	3	2	31	31	05	..	3	12	3	..	..	112	11 18
Montagu...	2	39	1	1	62	62	..	1	09	..	1	..	..	90	10 ..
Waverley...	4	59	4	3	252	252	..	..	08	00	..	..	..	101	05 07
Oldham....	8	30	4	3	185	185	..	..	12	07	2	..	..	111	16 12
Renfrew....	10	151	5	3	1091	1091	..	..	09	04	..	..	..	500	17 15
Uniaque....	16	53	5	5	439	933	..	..	09	01	3	..	..	422	09 14
Lawrencetown	2	35	2	2	131	31	10	..	13	..	..	..	..	20	18 ..
Unproclaimed and other districts	5	36	3	3	39	26	..	..	..	..	..	3	09	5	04 05
Total....	78	751	40	34	3630	4055	19	..	10	01	7	..	..	2037	07 02

NOVEMBER.

Stonmont, "Isaac's Harbour."	....	6	62	1	1	1	130	..	125	..	1	04 17	2	..	..	..	155	01 17
Wine Harbour	....	5	55	4	3	1	263	..	263	..	..	04 11	1	13 09	..	..	59	00 18
Sherbrooke	....	12	193	10	9	1	705	..	705	..	..	14 12	2	16 20	..	..	513	13 21
Tangier	....	5	38	3	2	1	8	..	8	..	..	06 09	..	09 08	..	..	2	11 20
Montagu	....	3	41	1	1	1	77	..	77	..	1	07 ..	..	09 09	..	..	104	..
Waverley	....	4	65	4	3	1	134	..	134	..	..	12 18	4	17 03	..	..	85	..
Oldham	....	8	30	4	3	1	122	13	122	13	..	15 04	2	09 13	..	..	93	04 ..
Renfrew	....	10	135	5	3	2	609	..	609	..	..	11 13	1	01 ..	..	..	352	07 18
Uniacke	....	16	52	5	5	..	511	..	449	..	..	05 17	3	00 00	..	..	127	15 04
Lawrencetown	....	2	35	2	2	..	39	..	39	..	..	13 05	..	13 05	..	..	25	14 14
Unproclaimed and other Districts	....	5	40	3	3	..	39	..	30	..	..	11 11	..	11 11	..	..	22	07 08
Total	....	76	746	42	35	7	2637	13	2570	13	..	11 23	4	17 03	..	..	1504	17 00

DECEMBER.

Stonmont, "Isaac's Harbour."	....	5	42	1	1	1	137	..	..	..	..	..	..	..	..	..	5	..
Wine Harbour	....	5	98	4	3	1	353	07	353	07	..	06 04	..	14 16	..	..	114	00 09
Sherbrooke	....	13	193	10	9	1	1250	..	1250	..	..	08 08	1	02 17	..	..	522	02 06
Tangier	....	5	38	3	2	1	43	..	43	..	..	12 04	..	12 04	..	..	26	19 ..
Montagu	....	3	38	1	1	1	62	10	62	10	..	13 ..	1	13 ..	..	..	108	03 ..
Waverley	....	1	71	4	3	1	257	..	340	..	..	06 07	..	10 16	..	..	112	03 14
Oldham	....	8	38	4	3	1	100	..	100	..	..	14 04	2	02 21	..	..	87	15 08
Renfrew	....	8	147	6	3	3	468	..	468	..	..	10 16	..	19 12	..	..	233	11 18
Uniacke	....	18	48	5	5	..	429	..	488	..	..	09 16	1	11 16	..	..	235	14 08
Lawrencetown	....	2	35	2	2	..	17	1	17	..	..	07 ..	..	07 ..	..	..	6	..
Unproclaimed and other Districts	....	5	35	5	5	..	92	..	71	..	..	03 07	..	05 ..	..	..	16	13 02
Total	....	76	733	45	37	8	3008	18	3192	17	..	09 07	2	02 21	5 15	..	1488	02 17

Oz. Dwt. Gr.
 Total 5065 06 19

(B.)

STATEMENT SHEWING THE AVERAGE DAILY LABOR EMPLOYED, THE AMOUNT OF QUARTZ CRUSHED, "THE YIELD OF GOLD PER TON OF QUARTZ," THE QUANTITIES OF GOLD FROM ALLUVIAL MINES, THE YIELD OF GOLD, THE MAXIMUM YIELD PER TON IN EACH DISTRICT, AND IN THE WHOLE PROVINCE AND THE VALUE OF THE AVERAGE YIELD OF GOLD PER MAN EMPLOYED IN MINING, FOR THREE MONTHS ENDING DECEMBER 31, 1867.

DISTRICTS.	Average Men employed.	Crushing Mills employed Dec. 31st, 1867.	Steam Power.	Water Power.	Quartz, &c Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total Yield of Gold.	Maximum Yield per Ton.	Average yield per Man for Twelve months at \$18.50 per oz.
Stormont, "Isaac's Harbour."	23	2	2	..	93 15	1 06 00	..	119 10 00	3 03 00	\$384 52
Wine Harbour ..	76	3	5	1	365 08	17 10	..	318 00 13	2 10 02	310 16
Sherbrooke	142	5	5	...	2376 08	1 02 19	..	2708 08 18	5 00 00	1408 40
Tangier	39	4	2	2	261 00	1 00 10	50 00 00	319 08 21	2 06 16	605 20
Montagu	28	1	1	...	30 00	12 17	..	19 01 19	12 17	50 20
Waverley	131	5	4	1	2755 00	08 09	..	1155 08 09	1 08 00	652 40
Oldham	33	4	3	1	220 02	17 11	..	192 07 01	1 14 10	418 92
Renfrew	216	5	3	2	1565 15	15 19	..	1237 08 10	2 02 19	423 76
Uniacke	79	3	3	...	784 10	19 02	..	748 08 12	2 15 00	700 40
Lawrencetown ..	42	2	1	1						
Unproclaimed and other Districts..	809	34	26	8	8452 18	16 03 50	00 00	6518 02 07	5 00 00	\$624 00

(B 2.)

STATEMENT SHEWING THE AVERAGE DAILY LABOR EMPLOYED, THE AMOUNT OF QUARTZ CRUSHED, "THE YIELD OF GOLD PER TON OF QUARTZ," THE QUANTITIES OF GOLD FROM ALLUVIAL MINES, THE YIELD OF GOLD, THE MAXIMUM YIELD PER TON IN EACH DISTRICT, AND IN THE WHOLE PROVINCE, AND THE VALUE OF THE AVERAGE YIELD OF GOLD PER MAN EMPLOYED IN MINING, FOR TWELVE MONTHS ENDING DECEMBER 30, 1867.

DISTRICTS	Average Men employed.	(Crushing Mills employed Dec. 31st, 1868.	Steam Power.	Water Power.	Quartz &c Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total Yield of Gold.	Maximum Yield per Ton.	Average yield per Man for Twelve Months at \$18.70 per oz.
Stormont, "Isaac's Harbour."	47	1	1	...	596 05	1 02 14 18 00 00	...	673 02 17	2 00 00	\$265 00
Wine Harbour ..	74	4	3	1	2938 01	08 12 .. ..	...	1248 06 03	5 12 06	312 00
Sherbrooke	191	10	9	1	8880 04	16 00 .. ..	...	7070 00 05	12 15 00	684 79
Tangier	38	3	1	1	725 05	1 04 07 15 00	...	921 08 09	4 09 09	448 59
Montagu	24	1	1	...	350 00	1 13 09 .. ..	...	584 14 22	2 04 00	450 70
Waverley	118	4	3	1	6372 00	07 12 .. ..	...	2387 08 22	15 08	374 30
Oldham	26	4	3	1	1015 13	14 04 .. ..	...	719 00 04	1 18 18	511 60
Renfrew	127	6	3	3	5994 05	11 06 .. ..	...	3373 14 09	1 19 00	491 44
Chicake	90	5	5	...	3874 15	16 16 .. ..	...	3247 03 17	18 00 00	667 49
Lawrencetown	31	2	2	...	382 17	14 00 15 12	...	272 02 08	24 06 16	162 40
Unproclaimed and other Districts	9	5	5	...	136 00	06 12 3 09 34	...	44 04 14	11 11	91 00
	775	45	37	8	31242 65	13 03 22 19 16	20541 06 10	24 06 16		\$490 34

(B :B.)

STATEMENT SHEWING THE NUMBER OF MEN EMPLOYED, QUARTZ CRUSHED, AND GOLD OBTAINED EACH MONTH IN EACH DISTRICT.

MONTH.	STORMONT.					WINE HARBOR.					SHERBROOKE.					TANGIER.					MONTAGU.										
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	
October, 1867.....	25	.....	.....	.....	.....	.....	109	144	08	146	17	00	140	1021	13	1476	17	22	39	101	..	..	..	..	28	..	..	..	..	..	..
November.....	25	37 15	.....	62 05	.....	.....	60	163	..	30 01	19	.....	142	392	10	227 00	12	39	68	..	..	..	..	28	..	..	..	..	..	..	..
December.....	20	56 ..	.....	57 05	..	..	58	180	..	141 01	18	.....	144	962	05	1004	10	08	39	92	..	..	..	..	28	30	..	19 01	19	..	..
Total.....	23	93 15	119 10	00	.....	.....	76	365	08	318 00	13	.....	142	2375	28	2708	08	18	39	261	00	319	08	21	28	30	00	19 01	19	..	..
January, 1868.....	32	30 10	18 15	00	.....	.....	55	124	14	85 18	18	.....	168	550	..	647	01	06	50	74	..	72	11	00	21	..	..	..	..	..	..
February.....	32	97 ..	148 02	..	.....	.....	45	114	12	50 18	11	.....	150	680	10	562	09	05	50	160	..	103	17	17	21	14	..	20	06	22	..
March.....	23	.....	.....	.....	.....	.....	123	225	..	101 10	09	.....	150	863	10	508	04	12	50	74	..	127	00	00	21	..	..	..	..	..	..
April.....	48	43 ..	71 12	..	.....	.....	48	181	13	75 03	17	.....	170	691	..	542	19	..	26	81	..	162	11	..	11	..	..	..	..	..	..
May.....	42	21 15	11 02	..	.....	.....	59	350	07	262	08	05	170	857	02	694	15	11	36	47	..	35	01	..	11	12	..	26	..	..	..
June.....	53	.....	.....	.....	.....	.....	57	224	09	240	00	22	175	636	10	296	04	16	36	63	..	108	14	10	11	..	..	..	..	..	..
July.....	54	.....	.....	2	.....	.....	121	161	07	127	02	16	250	908	11	695	08	05	24	70	..	22	17	..	20	..	..	..	..	..	..
August.....	68	.....	.....	2	.....	.....	120	120	18	34	05	..	240	1181	05	931	15	06	33	63	..	137	01	16	22	52	10	115	05	..	..
September.....	62	125	..	160	.....	.....	39	254	10	43	07	21	231	831	06	637	11	11	31	11	..	9	12	..	28	70	..	120	10	..	..
October.....	42	154	..	99 10	..	.....	71	564	14	54	09	01	200	725	10	517	15	02	38	31	05	112	11	18	39	62	..	90	10	..	..
November.....	62	125	..	155 01	17	.....	55	263	..	59	00	18	193	705	..	513	13	21	38	8	..	21	20	41	77	..	104	..	..	..	..
December.....	42	.....	.....	5	.....	.....	98	353	07	114	00	09	193	1250	..	522	02	06	38	43	..	26	19	..	38	62	10	108	03	..	..
Total.....	47	596 05	673 02	17	.....	.....	74	2938	1	1248	06	03	191	8880	04	7070	00	05	38	725	05	921	08	09	24	350	..	584	14	32	..

(B 2.)—CONTINUED.

MONTH.	WAVERLEY.						OLDHAM.						RENFREW.						UNLACKE.						Unproclaimed and other Districts.						
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	
October, 1867.....	131	707	..	283	10 05	46	104	09	96	10 23	231	512	..	477	15	..	88	396	..	341	09 02	41
November.....	131	1073	..	463	08 16	35	50	..	39	04 17	231	571	..	381	05 10	63	198	..	229	10 22	42	..	..	..	..	..	..	..	..	..
December.....	132	975	..	408	09 12	19	65	13	56	11 09	185	482	15	378	08	..	86	190	10	177	08 12	42	..	..	..	..	..	..	..	..
Total.....	131	2755	00	1155	08 09	33	220	02	192	07 01	216	1565	15	1237	08 10	79	784	10	748	08 12	42	..	..	..	..	..	..	..	..	..
LAWRENCETOWN.																															
January, 1868.....	158	891	..	331	13 17	23	20	..	24	08	..	116	266	..	207	11 20	85	242	10	503	03	..	16	28	..	15	07	14
February.....	158	621	..	264	10 14	23	48	..	46	13	..	108	253	..	171	16 11	69	249	..	426	09	..	16	75	..	34	12	01
March.....	158	820	..	340	04 13	16	23	..	13	18	..	100	326	..	274	19	..	70	277	..	324	03 06	16	55	..	31	02	18
April.....	160	855	..	354	03 10	23	47	17	42	18	..	108	307	05	207	16	..	64	199	..	255	03	..	27	10	10	4	03	00
May.....	160	711	..	259	16 02	23	58	..	36	05 17	115	461	..	241	09 21	91	108	10	121	10 12	27	25	..	10	10	10	03	..	..	..
June.....	160	835	..	239	..	19	65	18	54	04 09	116	629	..	369	06 04	116	174	11	240	16 16	27	12	..	12	..	6	06	08	..	..
July.....	91	550	..	132	17 06	23	54	04	63	02 03	115	440	10	257	05 10	139	209	10	146	00 21	45	19	..	19	..	35	02	05	..	..
August.....	91	151	..	65	12 03	30	93	05	87	11 17	144	463	10	237	08 13	149	261	..	189	10 18	45	40	..	40	..	50	03	07	..	..
September.....	91	212	..	101	02 08	30	197	16	57	03 10	165	680	..	299	03 23	137	283	14	254	07 14	45	30	17	32	09	12	..	..	..	..
October.....	59	252	..	101	05 07	30	185	..	111	16 12	154	1091	..	500	17 15	53	933	..	422	09 14	71	57	10	26	02	05	..	..	..	..
November.....	65	131	..	85	..	30	122	13	93	04	..	135	609	..	352	07 18	52	449	..	127	15 04	75	78	..	48	01	22	..	..	..
December.....	71	340	..	112	03 14	38	100	..	87	15 08	147	468	..	253	11 18	48	489	..	235	14 08	70	88	..	22	13	02	..	..	..	..
Total.....	118	6372	00	2387	08 22	26	1015	13	719	00 04	127	5994	05	3373	14 09	90	3874	15	3247	03 17	40	518	17	316	06	22

(C.)

COAL RAISED AND SOLD IN THE PROVINCE DURING THE YEAR ENDED SEPTEMBER 30, 1868.

COUNTY.	Round.	Slack.	TOTAL ROUND.		TOTAL SLACK.		TOTAL.	
			N. S. Proper.	Tons.	N. S. Proper.	Tons.	N. S. Proper.	Tons.
Cumberland.....	Tons. 9542	Tons. 928						
Pictou.....	106335 $\frac{1}{4}$	17689 $\frac{1}{2}$	115877 $\frac{1}{4}$		18617 $\frac{1}{2}$		134494 $\frac{3}{4}$	
Cape Breton.....	255801 $\frac{1}{2}$	17695 $\frac{1}{2}$	Cape Breton.		Cape Breton.		Cape Breton.	
Inverness.....	1110	54						
Richmond.....	627 $\frac{1}{2}$	42 $\frac{1}{2}$						
Victoria.....	1328 $\frac{1}{2}$	94 $\frac{1}{2}$	258867 $\frac{1}{2}$		17886 $\frac{1}{2}$		276754	
	374744 $\frac{3}{4}$	36504	374744 $\frac{3}{4}$		36504		411248 $\frac{3}{4}$	

(C 2.)

COAL RAISED AND SOLD IN THE PROVINCE DURING THE YEAR ENDED DECEMBER 30, 1868.

COUNTY.	Round.	Slack.	TOTAL ROUND.		TOTAL SLACK.		TOTAL.	
			N. S. Proper.		N. S. Proper.		N. S. Proper.	
	Tons.	Tons.	Tons.		Tons.		Tons.	
Cumberland.....	9093	1010						
Pictou.....	126612 $\frac{1}{2}$	18209 $\frac{1}{4}$	135735 $\frac{1}{2}$		19219 $\frac{1}{4}$		154954 $\frac{3}{4}$	
			Cape Breton.		Cape Breton.		Cape Breton.	
Cape Breton.....	276045 $\frac{3}{4}$	20699						
Inverness.....	131	.....					
Richmond.....	12	8						
Victoria.....	1633	141	277821 $\frac{3}{4}$		20848		298669 $\frac{3}{4}$	
	413557 $\frac{1}{4}$	40067 $\frac{1}{4}$	413557 $\frac{1}{4}$		40067 $\frac{1}{4}$		453624 $\frac{1}{2}$	

RETURNS COAL RAISED AND SOLD DURING THE YEAR ENDED 30TH SEPTEMBER, 1868.

COLLIERY.	County.	QUARTER ENDED DECEMBER 31, 1867.						QUARTER ENDED MARCH 31, 1868.					
		Raised.		Sold for Home Consumption.		Exported to neighbouring Colonies.		Exported to other Countries.		Raised.		Sold for Home Consumption.	
		Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Joggins.....	Cumberland.....	5643	415	349	37	2002	318	833	....	10	....	....	....
Maclean.....	714	....	351	....	163	....	16	....	94	....	....	....
New York and Acadia.....	255	100	55	....	139	73	263	96	198	24	....	....
C. H. Black.....
Acadia.....	Pictou.....	3656	1820	2284	703	758	....	4008	1580	2312	1651	....	....
Albion.....	21136	3274	5179	1794	3397	1278	95278	3786	237	54	....	....
McBean.....	12	12	....	....	....	....	2	6	....	....	....	....
McKay.....	10	5	20	12	....	....	95	50	95	45	....	....
Intercolonial.....	16581	829	712	1681	....	....
Nova Scotia.....	4172	....	4072	....	....	....
Pictou (German).....	139	....	98	15	....	....	....	....	....	....	....	....
Merigomish.....	15	12	15	12	....	....	....	....	....	....	....	....
Montreal and New Glasgow.....	45	45	45	45	....	....	....	....	....	....	....	....
Acadia.....	Cape Breton.....	....	....	....	....	....	....	....	....	....	....	....	....
Black House.....	10718	323	192	....	324	....	10615	625	....	....	....	....
Caledonia.....	1715	189	8	....	....	....	2114	233	....	....	....	....
Clyde.....	280	....	211	....	....	....
Collins.....	220	20	210	10	....	....	....	....	3	6	....	....
Glance Bay.....	11577	....	5012	523	478	....	5945	450	....	....	59	....
Gowrie.....	9084	1650	46184	5692	26582	372	9924	1530	799	402	431	....
Ingram.....	40	....	40	....	....	....
International.....	2676	852	1654	43	....	....	4500	160	191	141	....	....
Lingan.....	10439	714	213	372	....	....	86122	1581	2222	21	....	....
Matheson.....	366	49	254	....	....	....	220	....	....	....	....	....
South Head, Cow Bay.....	451	....	24	....	....	....	506	....	38	....	....	....
Sydney.....	32075	3874	177872	9091	13944	....	18498	3711	5734	3074	48	....
Victoria.....	5	3	189	....	500	....	30	20	....	....
Gardiner.....	5	5	....	....	....	....	....	....	....	....	....	....
Chimney Corner.....	Inverness.....	....	....	....	....	....	....	....	....	....	....	....	....
Cape Breton Coal Co.....	3662	512	50	54	746	....	....	....	....	....	....	....
Richmond.....	630	250	382	132	387	21	12	26	12	8	....	....
Black Rock.....	972	....	341	....	....	....	....	....	....	....	....	....
New Campbellton.....	800	....	243	251	39	....	....	....	....	....	....	....
		1120282	128831	37252	48062	254242	17272	913421	16663	51472	25602	7942	490

(C-1.)

RETURNS COAL RAISED AND SOLD DURING YEAR ENDED DECEMBER 31st, 1898.

COLLIERY.	County.	QUARTER ENDED MARCH 31, 1898.				QUARTER ENDED JUNE 30, 1898.			
		Raised.		Exported to Colonies.		Raised.		Sold for Home Consumption.	
		Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Joggins.....	Cumberland.....	833	10	.....	.....	2940	290	150	2175
Maccan.....	16	94	.....	.....	.....	.....	.....	189
New York and Acadia.....	263	198	24	.....	285	60	6	160
C. H. Black.....	96	.....	.....	.....	.....	.....	.....	4
Acadia.....	Pictou.....	4008	1580	1651	.....	8810	4408	629	740
Albion.....	25275	2312	54	.....	14500	1592	4785	4968
McBean.....	2	257	.....	.....	10	7 1/2	21	.....
McKay.....	95	95	45	.....	.....	.....	13	.....
Intercolonial.....	16581	711	746 1/2	.....	3372 1/2	1686 1/2	22	.....
New Scotia.....	829	31	168 1/2	.....	.....	.....	.....	3 1/2
Marsh (German).....	417 1/2	407 1/2	.....	.....	.....	.....	.....	.....
Merigonish.....	30	.....	.....	.....
Montreal & N. Glasgow.....
Acadia.....	Cape Breton.....	.....	.....	.....	.....	.....	.....	.....	.....
Black House.....	10615	625	.....	.....	7130	214	890	255
Caledonia.....	2114	233	41	.....	2138	254	89	20
Clyde.....	280	21 1/2	.....	.....	615 1/2	21	24	5
Collins.....	6	.....	.....	300	10	80	70
Glace Bay.....	3945	.....	.....	.....	12916	100	3010	4
Gowrie.....	9924	799	49 1/2	50	11800	2500	4134	400
Ingraham.....	40	.....	431	.....	.....	.....	1547	745
International.....	4500	191	144	.....	.....	.....	.....	5517
Lingan.....	8612 1/2	222 1/2	21	.....	1111	41	19	28
Matheson.....	230	.....	.....	.....	6382	931	.....	60
South Head.....	505	58	.....	.....	348	.....	.....	.....
Sydney.....	18408	573 1/2	48	.....	23008	2700	7904	256
Victoria.....	500	30	20	.....	789	.....	45	7530
Gardiner.....	66
Balmoral.....	284
Inverness.....
Chimney Corner.....	25	.....	56	.....
Port Hood.....
Richmond.....	12	12	8	.....	.....	.....	.....	.....
Black Rock.....	26	.....	.....	.....	72	.....	79	.....
New Campbellton.....	16	.....	243	142 1/2
.....	24	45
.....	9454 1/2	10663	5147 1/2	2560 1/2	95648 1/2	14886 1/2	22124	22478 1/2
.....	490	.....	.....	.....	3866	2062 1/2
.....	794 1/2	.....	.....	.....	.....	2228	12579 1/2

(C 4.) CONTINUED

COLLERY.	QUARTER ENDED SEPTEMBER 30, 1868.						QUARTER ENDED DECEMBER 31, 1868.						TOTAL QUANTITIES SOLD.					
	Raised.		Sold for Home Consumption.		Exported to Neighboring Colonies.		Raised.		Sold for Home Consumption.		Exported to Neighboring Colonies.		Exported to other Countries.		Round.		Slack.	
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Joggins.....	3100	314	374	89	2345	155	.....	.....	.....	.....	.....	.....	.....	.....	7295	943	.....	.....
Macam.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	290	.....	.....	.....
New York & Acadia.....	631	115	13	22	380	17	100	.....	.....	.....	.....	.....	.....	.....	1325	67	.....	.....
C. H. Black.....	80	.....	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	183	.....	9093	1010
Acadia.....	8111	1576	732	733	7805	125	6720	.....	.....	.....	.....	.....	.....	.....	29034	4592	.....	.....
Albion.....	14097	2128	4391	2427	2907	5478	38136	537	22532	3476	4326	1855	222	645	92492	13144	.....	.....
McLean.....	68	20	61	9	.....	.....	.....	.....	198	1353	134	103	.....	.....	208	1113	.....	.....
McKay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	95	45	.....	.....
International.....	4284	1963	324	84	.....	.....	.....	.....	186	72	.....	.....	.....	.....	32853	1420	.....	.....
Nova Scotia.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	407	168	.....	.....
Marsh (G. man).....	.....	.....	.....	.....	.....	.....	.....	.....	293	23	.....	.....	.....	.....	20	23	.....	.....
Merigonish.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montreal & N. Glasgow.....	200	.....	100	.....	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	200	.....	1266423	182094
Acadia.....	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Blackhouse.....	15302	915	543	.....	676	.....	.....	.....	14040	901	.....	.....	.....	.....	50335	.....	.....	.....
Caledonia.....	3829	424	79	465	298	135	8514	.....	1044	114	189	59	92	73	117233	812	.....	.....
Clyde.....	5704	.....	44	5	450	.....	.....	.....	10693	46	631	41	181	.....	8004	51	.....	.....
Collins.....	140	13	120	5	.....	.....	.....	.....	38	10	30	3	.....	.....	303	16	.....	.....
Glace Bay.....	15395	275	1624	2614	1329	292	24114	.....	12455	422	2682	255	406	.....	47630	2224	.....	.....
Groswater.....	11256	3552	4741	2012	4493	11411	4700	1851	11785	3911	7766	1764	2635	172	421333	135191	.....	.....
Inglis.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	.....	.....	.....
International.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lingam.....	1000	77	12	5	668	.....	37461	656	940	.....	3	29	.....	.....	4542	10083	.....	.....
Matheson.....	.....	.....	.....	.....	.....	.....	9042	.....	.....	.....	126	9	300	.....	20634	42	.....	.....
South Head.....	1105	.....	.....	.....	.....	.....	1525	.....	343	.....	.....	.....	.....	.....	1863	8	.....	.....
Sydney.....	3360	.....	21290	559	24827	48	2856	549	29078	2232	137533	1404	10935	.....	93573	13907	.....	.....
Victoria.....	2935	.....	.....	.....	1990	55	.....	.....	.....	.....	.....	.....	.....	.....	2406	120	.....	.....
Garfield.....	19	5	.....	.....	.....	.....	.....	.....	15	4	.....	.....	.....	.....	.....	.....	.....	.....
Balmoral.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chimney Corner.....	108	.....	8	.....	.....	.....	.....	.....	67	.....	.....	.....	.....	.....	131	.....	.....	.....
Port Hood.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Richmond.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Black Rocks.....	49	.....	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	118	.....	.....	.....
New Campbellton.....	633	315	171	.....	3974	.....	.....	.....	351	175	349	72	214	.....	1515	141	1633	141
.....	1162464	14255	315854	67191	477634	75903	1238384	35293	998844	1316921	358381	67073	260337	1870	738893	25413	4135357	4100674

(D.)

GOLD.

MINE DEPARTMENT FOR THREE MONTHS ENDED DECEMBER 31, 1867.

EXPENDITURE.

RECEIPTS.

DISTRICTS.

	Rents.	Royalty.	Sites.	Totals.	Salaries, Surveyors, &c.	Return of Rents.	Return of Royalty.	Royalty Commiss'n.	Lands.	Total.
Oldham.....	78 00	112 55	.....	190 55	42 00	2 00	30 86	6 05	.....	80 91
Reidrew.....	50 00	806 22	.....	856 22	37 50	.....	.....	45 55	.....	83 05
Waverley.....	16 00	37 54	.....	53 54	.....	.....	40 04	.....	.....	40 04
Tangier.....	20 00	181 79	.....	201 79	140 00	4 00	.....	.....	16 00	160 00
Stormont, " Isaac's Harbor	585 10	88 60	.....	674 00	105 25	.....	.....	.....	.....	105 25
Wine Harbour.....	428 00	137 62	.....	565 62	57 50	.....	.....	5 94	.....	63 44
Sherbrooke.....	1042 00	1116 90	.....	2158 90	201 00	.....	.....	93 01	.....	291 01
Ovens.....	70	70	.....	70	.....	.....	.....	.....	.....	.....
Montagu.....	14 00	191 00	.....	205 00	.....	.....	.....	.....	.....	.....
Wagamatcook.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uniacke.....	458 00	391 76	.....	852 76	26 00	30 00	.....	8 87	.....	64 87
Lawrencetown.....	126 00	.....	.....	126 00	3 50	.....	.....	.....	.....	3 50
Unproclaimed.....	302 00	.....	.....	302 00	111 50	.....	.....	.....	.....	114 50
Prospecting Licenses.....	.....	.....	.....	1077 67	.....	.....	.....	.....	.....	.....
Roads.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	206 67
	3119 40	3370 68	.....	7567 75	727 25	36 00	70 90	159 45	16 00	1276 27

(D 2.)
GOLD.

MINES DEPARTMENT FOR TWELVE MONTHS ENDED DECEMBER 31, 1868.

DISTRICTS.	RECEIPTS.				EXPENDITURE.				
	Rents.	Royalty.	Sites.	Totals.	Salaries, Surveys, &c.	Return of Rents.	Return of Royalty, Commiss'n.	Lands.	Totals.
Oldham	562 50	559 64	....	1122 14	228 50	2 00	....	15 66	246 16
Reitrew	1105 75	1997 81	....	2903 56	324 50	112 00	....	107 89	544 39
Waverley	68 00	1003 73	....	1071 73	....	8 00	77 01	69 47	154 48
Tangier	368 00	565 27	....	933 27	....	58 00	....	11 09	300 09
Stromont, Isaac's Harbour.	1199 58	398 16	....	1597 74	539 80	72 00	....	20 53	825 83
Wine Harbour	3011 00	708 20	....	3719 20	743 75	32 00	....	36 90	842 65
Sherbrooke	7114 00	1191 48	....	11305 48	1935 84	218 00	....	228 15	2597 99
Ovens	174 00	....	....	174 00	....	....	....	....	....
Montagu	330 00	....	....	330 00	....	34 00	....	....	34 00
Wagamatkook	353 00	....	....	353 00	95 00	6 00	....	....	101 00
Unacke	1350 00	1084 57	....	3154 57	417 12½	16 00	....	86 21	519 33
Lawrencetown	2370 00	37 64	....	2407 64	567 45	32 00	....	....	599 45
Unproclaimed	3296 00	14 79	....	3310 79	179 20	112 00	....	....	291 20
Prospecting Licenses.	....	....	....	20397 37	....	373 98	....	....	373 98
Roads .....	....	....	....	....	....	....	....	....	....
	21301 83	11081 29	....	52780 49	5031 16½	1075 98	77 01	575 90	507430 55

Supplementary Account of Expenses common to both Branches of the Department.

Stationery and Printing.....	82351 45
General Expenses.....	6890 77
	<u>88742 22</u>
Expenses Gold.....	7420 55
Coal.....	532 00
Total.....	<u>\$16594 77</u>

(E.)

OTHER THAN GOLD.

MINE DEPARTMENT FOR THREE MONTHS ENDED DECEMBER 31, 1867.

EXPENDITURE.

RECEIPTS.

COUNTIES

	License to Search.	License to Work.	Royalty.	Totals.	Return License to Search.	Return License to Work.	Surveys.	Totals.
Antigonish...	20 00	..	.....	20 00	.....	.....	.....	50 00
Chambersland	160 00	50 00	.....	210 00	.....	50 00	.....	20 00
Cape Breton	140 00	100 00	1201 57	1441 57	20 00	.....	.....	80 00
Pictou	200 00	.....	14 70	214 70	80 00	.....	.....	20 00
Inverness	60 00	100 00	.....	160 00	.....	.....	.....	.....
Colchester	40 00	.....	..	40 00	20 00	.....	.....	.....
Marble	20 00	.....	.....	20 00	.....	.....	.....	.....
Richmond	80 00	50 00	.....	130 00	.....	.....	.....	.....
Halifax	40 00	.....	.....	40 00	.....	.....	.....	.....
Victoria .....	..	.....	113 25	113 25	.....	.....	.....	.....
	\$760 00	300 00	1329 52	2389 52	120 00	50 00	.....	170 00

Expenses Gold..	..	..	..	..	..	..	\$1276 27
Coal..	..	..	..	..	..	..	170 00
Stationery and Printing ..	..	..	..	..	..	..	5 05
General Expenses ..	..	..	..	..	..	..	2283 07
Total ..	..	..	..	..	..	..	\$3734 39

(E 2.)

OTHER THAN GOLD.

MINES DEPARTMENT FOR TWELVE MONTHS ENDED DECEMBER 31, 1865.

COUNTIES.		RECEIPTS.				EXPENDITURE.			
		Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Licenses to Search.	Return Licenses to Work.	Surveys.	Totals.
Antigonish ..	.....	220 00	.....	.....	220 00	20 00	.....	.....	20 00
Cumberland ..	.....	320 00	150 00	2010 40	2480 40	40 00	.....	230 00	270 00
Cape Breton ..	.....	660 00	450 00	30036 23	31146 23	20 00	.....	2	22 00
Pictou .....	.....	520 00	100 00	11707 69	12327 69	.....	50 00	.....	50 00
Inverness ..	.....	420 00	100 00	6 40	526 40	.....	.....	.....	.....
Colchester ..	.....	60 00	50 00	.....	110 00	.....	.....	.....	.....
Hants .....	.....	80 00	.....	.....	80 00	.....	.....	.....	.....
Kings .....	.....	160 00	.....	.....	160 00	.....	.....	.....	.....
Lunenburg ..	.....	20 00	.....	.....	20 00	.....	.....	.....	.....
Richmond ..	.....	40 00	50 00	.....	90 00	.....	.....	.....	.....
Victoria .....	.....	220 00	50 00	860 55	1130 55	.....	.....	.....	.....
Guysborough ..	.....	80 00	.....	.....	80 00	.....	.....	.....	.....
Habitax .....	.....	40 00	.....	.....	40 00	.....	.....	.....	.....
Annapolis ..	.....	40 00	.....	.....	40 00	.....	.....	.....	.....
		2880 00	950 00	44621 27	48451 27	80 00	50 00	232 00	362 00

(17.)

COMPARATIVE STATEMENT

OF RECEIPTS AND EXPENDITURE FOR THREE MONTHS ENDED DECEMBER 31, 1866, WITH THREE MONTHS ENDED DECEMBER 30, 1867.

RECEIPTS	3 Months, 1866.	3 Months, 1867.	EXPENDITURE.	3 Months, 1866.	3 Months, 1867.
Rents, (Gold).....	.....	3119 40	Salaries and Surveys, (Gold)....	.....	727 25
Royalty ".....	.....	3370 68	Return Royalty.....	376 25	70 90
Prospecting Licenses, (Gold).....	.....	1077 67	Return Rents.....	267 77	36 00
Licenses to Search, (Coal).....	.....	760 00	Royalty Commissions.....	4 00	159 45
Licenses to Work.....	.....	300 00	Lands.....	122 15	16 00
Royalty.....	.....	1329 52	Roads.....	21 00	266 67
			General Expenses.....	2066 03	2283 07
			Stationery and Printing.....	185 25	5 05
			Return License to Search, (Coal)	180 00	120 00
			" Work.....	.....	50 00
			Office Expenses.....	21 25	.....
			Surveys.....	6 00	.....
Total.....	88261 31	89957 27	Total.....	83249 70	86734 69

COMPARATIVE STATEMENT

RECEIPTS AND EXPENDITURE FOR TWELVE MONTHS ENDED DECEMBER 31, 1867, WITH TWELVE MONTHS ENDED DECEMBER 31, 1868.

RECEIPTS.	12 Months, 1867.	12 Months, 1868	EXPENDITURE.	12 Months, 1867.	12 Months, 1868.
Rents, (Gold)	8372 83	21303 08	Return Royalty, (Gold)	511 06	77 01
Royalty "	14616 54	11081 29	Commission on Royalty, (Gold)	679 33	575 90
Prospecting Licenses (Gold)	2262 01	20396 12	Salaries and Surveys, "	2380 75	5031 16
License to Search, (Coal)	2880 00	2880 00	Return Rents, "	82 00	702 00
Royalty "	65209 65	44621 27	Lands,	20 60	670 50
License to Work "	2050 00	950 00	Stationery and Printing	1257 15	2351 45
			Return P. License,	5 75	373 98
			General Expenses	7730 05	6390 77
			Return License to Search	680 00	80 00
			Surveys, (Coal)	13 87	232 00
			Return License to Work	100 00	50 00
			Office Expenses	55 75	
			Roads	693 00	
			Total Amount	14209 31	16534 77
			Balance	81181 72	84696 99
	£95391 03	101231 76		£95391 03	101231 76

43 442 441 440 439 438

413 412

E A S

410 411

PAVED SLATE WITH LEADS BEL

BANDS

SHER

SHER

LEADS BELONGING TO TAYLO
THIN BANDS OF PLUMBAGIN

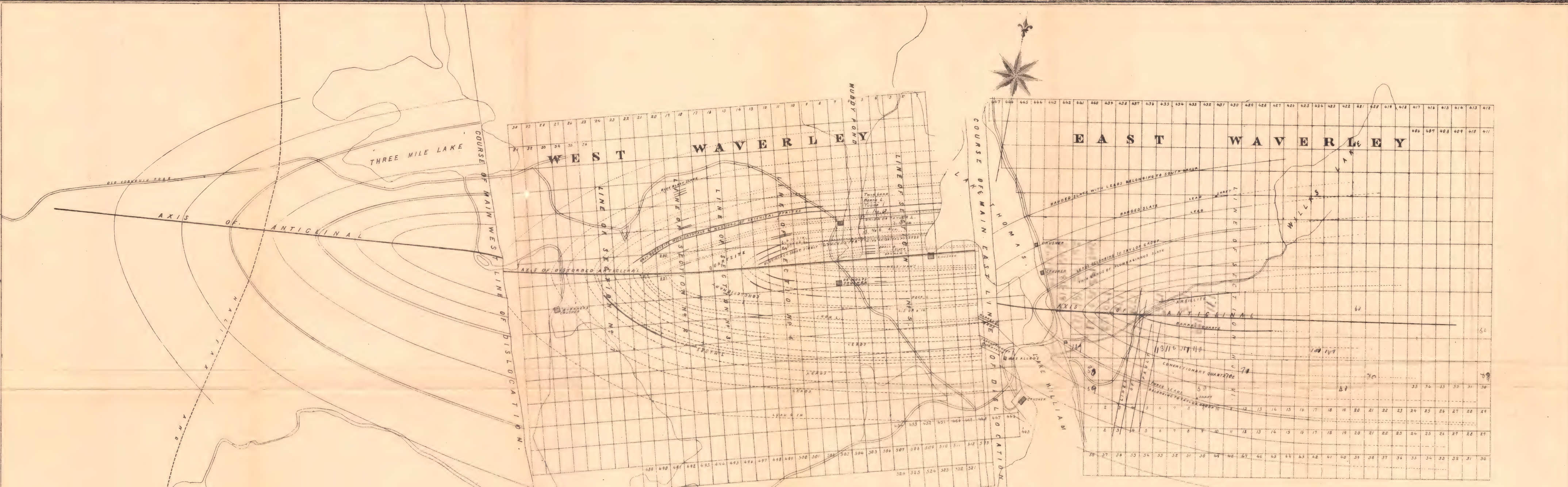
AXIS

OF

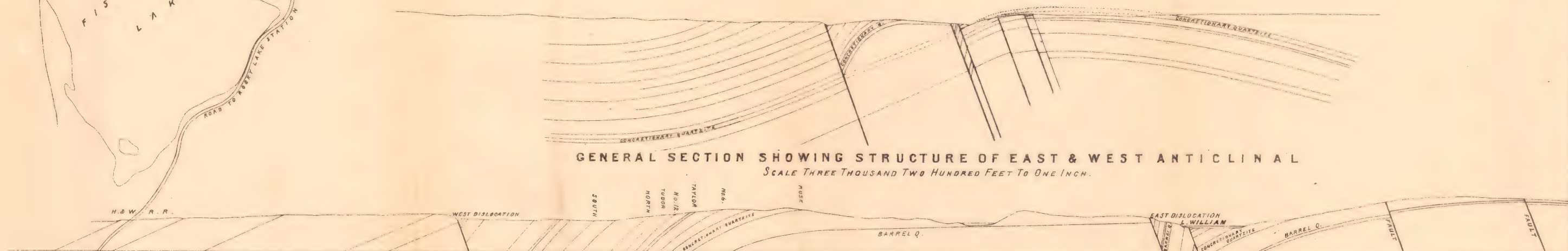
52

250

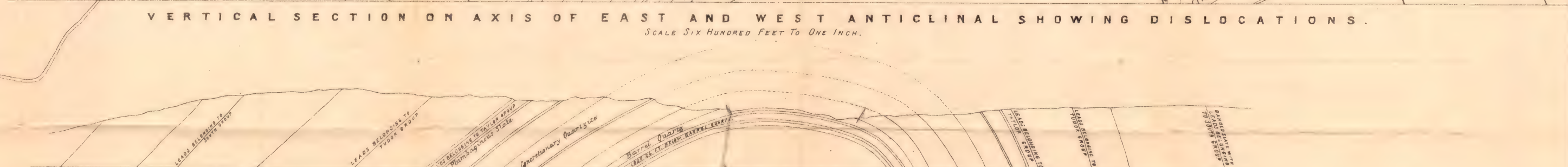
59



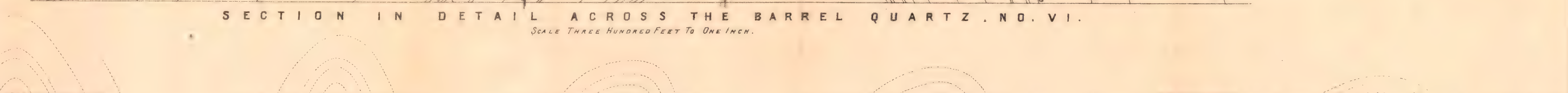
GENERAL PLAN OF THE DISTRICT, SHOWING PROBABLE OUTCROP OF LEADS OR BEDS OF QUARTZ.
SCALE, SIX HUNDRED FEET TO ONE INCH.



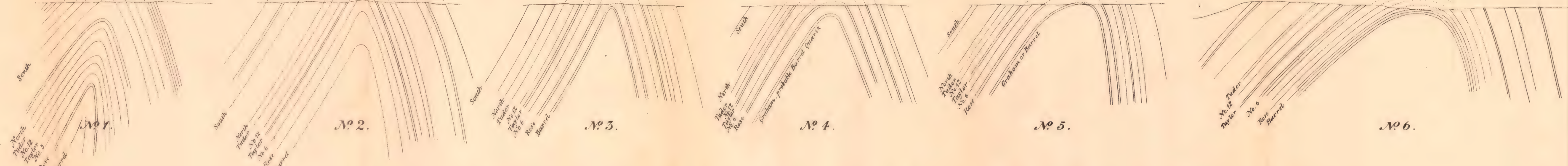
GENERAL SECTION SHOWING STRUCTURE OF EAST & WEST ANTICLINAL
SCALE THREE THOUSAND TWO HUNDRED FEET TO ONE INCH.



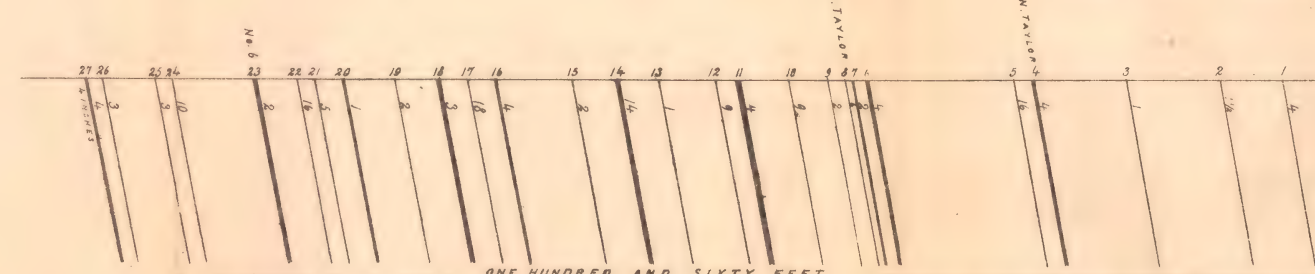
VERTICAL SECTION ON AXIS OF EAST AND WEST ANTICLINAL SHOWING DISLOCATIONS.
SCALE SIX HUNDRED FEET TO ONE INCH.



SECTION IN DETAIL ACROSS THE BARREL QUARTZ, NO. VI.
SCALE THREE HUNDRED FEET TO ONE INCH.



CROSS SECTIONS, EAST AND WEST ANTICLINAL
SCALE, EIGHT HUNDRED FEET TO ONE INCH.



SECTION IN DETAIL OF THE TAYLOR GROUP
SCALE TWENTY FEET TO ONE IN.

GEOLOGICAL MAP
OF
WAVERLEY GOLD DISTRICT
WITH
VERTICAL SECTIONS
BY

HENRY YOULE HIND, M.A.; F.R.C.S.
Windsor, N.S. Jan. 1889

Concretionary Quartzite
Slate
Phanerozoic Slate
Gneiss Quartzite
Note colored maps in the Mines Dept. Bulletin

DISLOCATIONS.	DEPTHS.
East main Dislocation, above the North	320 Feet
West main Dislocation, above the South	190
Centres of East, on line between Arct 200 and 221	160
Upthrow of East main Dislocation	570
Upthrow of West main Dislocation	760
Upthrow of some of earth between main Dislocations	1560
Displacement by lateral pressure from East to West	350
Depth of Taylor Lead, East side of West main Dislocation	1260
West side of West main Dislocation	3060
on average	26
26	660
26	320
26	160
26	0
Outcrop	21
Mean angle of inclination to degrees W	0

Note: The approximate depth of other veins at different points can be determined from the sections.
N. B. The continuous lines denote worked veins. The dotted lines indicate probable continuation of outcrop.

REPORT

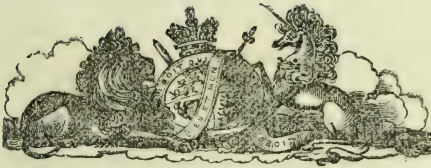
OF THE

Chief Commissioner of Mines

FOR THE

PROVINCE OF NOVA SCOTIA,

FOR THE YEAR 1869.



HALIFAX, N. S.,

PRINTED BY CHARLES ANNAND,

1870.

REPORT.

DEPARTMENT OF MINES,

Halifax, January 20, 1870.

SIR,—

I have the honor to submit, for the information of His Honor the Lieutenant Governor, the following Report on the affairs of the Department of Mines for the year ending the 31st day of December, 1869.

SHERBROOKE

still holds its place as the leading gold-producing District. During the year there were 19 companies operating in this locality with varied success.

The Palmerston, Metropolitan, and Dominion companies' works are on what is called the Palmerston lode—a belt of alternate layers of slate and quartz, similar to that recently found at Isaac's Harbor, fully 20 feet in width. The Dominion and Palmerston companies have each their own crushing mill, and are doing a large and profitable business. The Metropolitan has as yet no crusher, and their works have therefore been limited.

The Canadian, Meridian, Chicago, Wentworth, Crescent, and Caledonia companies have been operating but on a limited scale.

The Kingston and Sherbrooke companies have sunk a shaft each on the Wellington and Dewar lodes.

The Wellington is still doing a large and profitable business, the result of the last month's work (December) being 666 ounces gold from 500 tons of quartz, at a cost of 3800 days' labor.

The Rockville company have in permanent work sunk two shafts on the Dewar lode; but the mine is now worked on tribute, and pays the shareholders at the rate of ten per cent on the invested capital.

The Hayden and Derby companies have invested a considerable amount in permanent works, in cross cutting, &c., with good results.

The New York and Sherbrooke company has been principally engaged in prospecting, resulting in the discovery of some good lodes, from which satisfactory returns have been received.

The above are in the older worked portions of the district.

Outlying, to the south of the old works, about half a mile, the McKimmon lode has been opened, which promises well. This property has lately been purchased by Messrs. McClure and Snow, who have commenced work thereon.

COCHRAN HILL.

The Cochran Hill company, Kirk & Company, and Mr. McDonald, have each opened a number of lodes, which promise good results. A crushing mill, water power, of 15 stamps, has been erected at Melrose, about two and a half miles from the Cochran Hill district, and operations in the locality indicate continuous work.

WINE HARBOUR.

In this District a large amount of permanent work has been performed, during the past year, in sinking shafts, cross tunnelling, &c.

The Napier company (successors to the Provincial company) has sunk 3 shafts, drove 100 feet of cross tunnelling, erected efficient pumping and hoisting machinery, driven by steam, with shaft and engine houses, and have their works in an advanced stage, preparatory to mining a large quantity of ore in a scientific and workmanlike manner.

The Globe company's property, worked for some time by Mr. McIntosh, is now being mined upon a lode 5 or 6 feet in width, composed of alternate layers of rock and slate; and although the yield per ton has been small, the returns have given a fair profit. The mine has been worked by open trench from the surface, which is now at a depth requiring steam pumps and hoisting machinery, intended to be furnished by the company.

The Eldorado company are still progressing with their tunnel, which is now about 500 feet in length, crossing the metals, and cutting some workable lodes, on one of which 2 shafts are being sunk, and one on another lode; a further extension of the tunnel will cut a number of known gold-bearing lodes, besides draining a large surface of very wet mining ground.

The Eureka company has been principally engaged in stoping and ordinary mining, although they, too, have done some preparatory mining on a new lode recently discovered. Although the yield from this district for the past year was small, much larger returns may hereafter be confidently expected, as the mines are being opened and worked in a scientific manner, and on lodes that formerly yielded profitable results.

TANGIER.

The Strawberry Hill company, which have been continuously and profitably engaged in mining, have made considerable additions to their permanent works.

The property held by the New York and Nova Scotia company has been purchased by H. R. Fletcher, Esq., who has now the works in active operation, receiving satisfactory returns.

At Old Tangier but little has been done. The Gladstone or Beneficary company mine at this place has also been purchased by Mr. Fletcher. A small but very rich lode was lately found on this property, and profitably worked for a short time.

MONTAGU.

The Union mine, now owned by R. G. Leckie & Co., and called the Montagu mine, was continuously worked since the first discovery of gold in this district, in 1863. The mining operations were confined to two lodes, the "Belt" and "St. Patrick," the works on which are now suspended; on the "Belt" lode from the insufficiency of the engine and pumping apparatus; on the "St. Patrick" from the want of necessary machinery. The works now carried on by this company are on two lodes recently discovered, which have proved remunerative.

There is in course of erection a crushing mill of 15 heavy stamps (in place of one of 8 light stamps), with the modern appliances for saving the arsenical and iron pyrites and sulphides, which in this district, and particularly in the "Belt" lode, are very abundant and highly auriferous. There are now on this property four rich lodes (tested), which only require efficient machinery to enable them to be vigorously and profitably worked.

The Albion mine (formerly called the McQuarry), now owned by Messrs. W. & E. Lawson, after a long suspension, is now and has been since August last in active operation. The works are confined to the "Belt" lode. Hoisting and pumping machinery has been erected; the pumps are such as are used in the oil wells in Canada, which have proved both economical and efficient, and are well worth the inspection of those engaged in gold mining.

The above are the two principal mines in the district.

The Bendigo mine was opened, and a small crusher built by an association of Welsh miners; the quartz shewed some gold, but when crushed the yield was small, possibly from the crusher being new and the copper plates not properly coated. Since May the association dissolved, and the mine has passed into other hands. I have understood that want of funds and disagreement among the parties were the causes.

Messrs. Temple & Salter prospected on a lead of from 12 to 14 inches, which, judging from some tons crushed at the Montagu crusher, with suitable machinery on the ground, could be made to pay. Some prospecting has been done by a number of others, but with what success I am unable to say.

The prospects of this district are now brighter than for some years past. There is, however, a drawback in the scarcity of fuel for the use of the engines, the distance by the present roads from Dartmouth being not far short of seven miles. A new road of about two miles has been proposed that would reduce the distance about one-third, and materially lessen the cost of the carriage of coal from Dartmouth.

Since writing the above I received the following report from Mr. W. H. Browne, the manager of the Montagu mine,

which I consider peculiarly interesting, and have therefore taken the liberty of embodying with these remarks :

“The only mine in this district which has been continuously worked throughout the year is the Montagu, (late Union mine,) belonging to Messrs. Leckie & Co., on which operations have been in progress on four lodes. The Belt, Werner or St. Patrick, Lydia and Sarah, of which the two latter are new discoveries.

The Belt, which has been producing a very considerable amount of gold monthly, was suspended in February in consequence of the total insufficiency of the pumping and hoisting engine to do the work required. The lode has since been idle, awaiting the new machinery now being erected. A powerful engine, 12-inch cylinder, with suitable pumps, on the excellent plan adopted by the Messrs. Lawson on the adjoining mine, are being put up, and a very short time will see this valuable lode again at work. Its width is 5 inches, the deepest shaft 148 feet, and it is opened a length of 368 feet in this mine and produces quartz this entire distance, yielding an average of close upon 2 oz. per ton.

Pockets of highly auriferous arsenious iron pyrites (mispeckel) are found (often in considerable numbers, and weighing from 20 to 150 lbs. each,) attached to the lead on the footwall. These are very valuable, but being difficult to treat have been hitherto somewhat neglected. One of these weighing 110 lbs., from the Montagu mine, was crushed last summer, (by a process somewhat different from the ordinary,) with 14 cwt. of poor rock, and yielded 4 oz., 9 dwt., 6 grs. smelted gold, or 80 oz. per ton. They are found in this mine, and that of the Messrs. Lawson, in the Belt lode only. There will be 8 shafts in use on this lode, all of which are commanded by the engine. Pumps capable of lifting 5000 gallons of water per hour (a quantity in excess of that ever produced) will be erected, the smaller of which will supply clear water to the boiler from a cross cut 90 feet down.

The Werner or St. Patrick lode was worked to a considerable extent during the year, and produced a good deal of gold, the quartz yielding $2\frac{1}{4}$ oz. per ton, \$2 per foot of lead. It produced some splendid specimens. It is opened 200 feet

long, of which 100 feet is pay ground. It has reached a depth requiring machinery for pumping, and now awaits it. This lode is valuable, and should have further developments made on its extension.

In July some prospecting was done west of the crusher on this company's property, on hitherto unexplored ground, resulting in the discovery of several lodes, of which two, the Lydia and Sarah have proved quite productive. The former is already opened a length of 320 feet; its deepest shaft is 55 feet down. The lode averages four inches in width, and is very rich in places. The whole lengths opened will yield $1\frac{3}{4}$ oz. per ton.

The Sarah lode is seven inches wide, has been opened about one hundred and forty feet in length in three shafts, the deepest fifty feet. The first crushing from it yielded 3 oz. 5 dwts. per ton; and it has since maintained a high yield.

These two lodes are traversed by many cross leads, of various widths, from quarter of an inch to one foot, of which three or four are quite rich; one especially so at its point of intersection with the main lodes, and it shews much gold as far back as it has been opened.

The old crusher on this mine having become unequal to the amount of quartz likely to be raised in the district, and having run a long time, a new one of much greater capacity has been erected, and rapidly approaches completion. It has fifteen heavy stamps in place of the eight light ones of the old mill, and will have complete arrangements for saving and concentrating the large quantities of auriferous pyrites and sulphides in the quartz of Montagu which have hitherto been completely neglected, and run into the dumps of tailings, which from this source alone assays on the average 13 dwt. per ton of tailings, (from assays made by Mr. Longmaid,) and this saving of the pyrites is expected to make a very considerable increase in the yield of gold from many of the lodes in the district.

A very considerable amount of prospecting has been done on this mine during the year, and many lodes have been opened on and tested, several of which will come into profitable operation with the cheaper crusher now erecting.

No less than fifty lodes, of sizes from an inch to four feet,

are known to exist on this mine, and no lode yet tested in Montagu has yielded less than 5 dwt. per ton, with one exception, the Cogswell lode, which gave 4 dwt. only. This mine, with the thorough equipment it is now receiving, and its four rich lodes (proved) will very much increase its past production.

The Albion mine, belonging to the Messrs. Lawson, adjoining the previously described mine, and on the Belt lode also, was again opened at the latter end of summer, with very complete and effectual pumping and hoisting machinery, and has since been in profitable operation. The three crushings it made in 1869 (at the Montagu mill) yielded an average of over $2\frac{1}{2}$ oz. per ton, and one completed since gave over 3 oz. The pockets of auriferous, arsenious pyrites (mentioned previously) are not included in the crushings, being saved for other treatment.

The pumping and hoisting machinery is admirably adapted to its work, and for economy and use is not surpassed in the province.

The pumps are on the model used in the oil regions, and capable of pumping five thousand gals. per hour, are light and easily handled, yet strong, a great consideration when the shaft is being continuously sunk. The main pump has five feet stroke, diameter $3\frac{3}{4}$ inches inside, the rod working inside the column. A smaller pump supplies the boiler with clear water from the cross-cuts."

WAVERLEY.

Operations have been carried on in this district by the Lake Major, Rockland, American Hill and Waverley gold Mining companies, and by Leopold Burkner, Esq. The most noticeable feature in this district is the tracing of the southern outcrop of the celebrated Tudor lode, by a series of openings connecting two points eleven hundred feet distant, and thus proving the correctness of the views entertained by Professor Hind of the geological structure of this district, as described in his report and fully exemplified in the map accompanying that report. The South Tudor has been now traced for up-

wards of eleven hundred feet, and the mean difference between the outcrop assigned by Professor Hind and the actual outcrop, disclosed by shafts, does not exceed twenty-five feet six inches throughout that horizontal distance.

Mr. Burkner is at work on the above named South Tudor, with every indication of success.

OLDHAM.

In this district there has been quite an increase of business done by companies and individuals operating on what were abandoned mines. The principal part of the work done, and gold obtained, has been by the Sterling company, who have acquired several small properties formerly partially worked, and besides have recently obtained the "Frankfort" property. Preparations are being made by the Sterling company to largely extend their works, machinery, &c.

Measures are also in progress to again open the Boston and Oldham mine, by a company recently formed.

The Richey and Fraser mine has been again re-opened, and is now worked by Capt. Coxetter, by whom some remarkably rich rock has been raised, and the works carried on with vigor and success.

Mining has also been carried on, on a small scale, by Messrs. Oakes, Pearson, Donaldson, Fraser, Bayne, and Woodruffe. A small crusher of two batteries, driven by water, has lately been erected, and on the whole the prospects of this district are more encouraging than for some time past.

RENFREW.

The mining in this district has been principally carried on by the Ophir and Colonial gold mining companies, and by Mr. Charles A. F. Gay.

The works of the Ophir gold mining company are on the North, South, McClure and Brook lodes. A shaft on the North lode is now at a depth of 400 feet. The work on this and the South lode has lately been suspended, but the McClure and Brook lodes are still operated on.

The Colonial company continued to work the North lode

until lately, when they also were obliged to cease mining in consequence of their not being provided with sufficient appliances to raise the water, which was largely increased by the suspension of the Ophir. The Colonial have also worked the McLeod lode, and re-opened others that were formerly worked, besides commencing operations on some new ones.

The works on the free claim have been revived by Mr. Gay.

LAWRENCETOWN.

This district, so far as obtaining gold is concerned, may be said to be at a stand still. On the Werner property a large amount of permanent work has been done by the Westminster gold mining company of Nova Scotia, limited. A crusher of four batteries, of five stamps each, has been erected (two of the batteries only are yet in position and working), with hoisting and pumping machinery, all driven by water power. A large amount of quartz has been raised, machinery for saving the pyrites and amalgamating purposes erected and crushing commenced. The Waddelow mine and crusher now held by James Carson, Esq., has been comparatively idle during the year, although when worked by the Messrs. Waddelow the yield per ton was about sixteen dwts., at a cost of \$4 for raising and crushing.

At the Strange mine nothing has been done since the date of my last report.

UNIACKE.

The Uniacke gold mining company's works, commenced in 1867, are still carried on with a steady return of profit to the owners. A large amount of permanent work has been performed—a tunnel, cross-cutting the metals, has been driven a distance of 135 feet, exhibiting a number of gold-bearing leads, at a depth of 110 feet from the surface: the quartz mined from the two now worked yielding a handsome profit; with larger crushing power the property would be in a position to profitably employ more men than it has ever been able to do before.

The Montreal gold mining association have been chiefly

employed in operations of an exploratory character, by sinking trial shafts on several lodes preparatory to locating permanent works. The results of the explorations, as reported by the manager, Mr. W. M. Robinson, are of a very satisfactory character.

The operations of the Central, Prince of Wales, Brunswick Queens, West Lake and Toronto Co.'s, during the year, were limited in extent, and chiefly of an exploratory character.

OVENS, LUNENBURG.

The works in this district, principally carried on by Smith McKay and associates, by whom a considerable amount of labour was performed, have not as yet been attended with very satisfactory results. The Waddelow mine at Indian Path has been to a large extent idle, at which I am the more surprised, as, from the appearance of the lode, when visited by me in 1868, I had every reason to believe it would pay a handsome profit; and I strongly suspect that the want of success is largely due to the crushing and amalgamating apparatus, particularly the latter, which, like the appliances generally used in the province, is only adapted to secure the coarse free gold.

Mr. J. R. Waddelow, in a recent letter, furnishes the following :

"Little has been done this year. Some prospecting was done in the summer; in consequence of the discovery of some large and rich surface boulders we found ten or twelve lodes of various sizes up to five feet, some of which shewed gold very well, but we did not find either of those which we were looking for. However as no natural impediment to prospecting exists in the locality, and as our trench did not extend more than about 125 feet, there is no reason why they should not be found.

"We also made some tests of surface earth from different parts of the property, amounting in all to about 25 tons, which gave sufficient to shew that several acres of it might be taken away and crushed at a profit of about a shilling a ton; this, though insignificant in a small way, would amount to a great sum of money on the many thousands of tons which exist here, besides, of course, uncovering the lodes. * * *

"We have discovered beyond a doubt that a large proportion

of gold was lost in our earlier crushings, as we always suspected, but never could prove. We find now that all the flowered mercury that we can wash out of the tailings contains from 4 to 6 dwts. of gold to the pound, and therefore since 80 lbs. of mercury were lost, from 16 to 24 oz. of gold were also lost. This is rather an important discovery, as it raises the total average returns from $6\frac{1}{2}$ to 9 dwts., which would of course be a very satisfactory yield on a large lode like ours."

WAGAMATCOOK.

At this district but little has been done. A crusher is, I understand, in course of erection.

MUSQUODOBOIT, "JENNINGS,"

so called, has not as yet been proclaimed a gold district. Two crushers were built and put into operation in April, one of 10 stamps, built by Messrs. Hyde, and the other, of 8 stamps, by Mr. Bushing. The Messrs. Hyde have also constructed a tramway of about $3\frac{1}{2}$ miles in length, between the mines and crusher, and a number of buildings necessary to carry on a large business. With the exception of a few tons at their mill in April there was no crushing done at the Hyde mill until September, when the tram-road was completed, since which time the crusher has been steadily employed. The lode, which is about 5 inches in thickness, is opened about 600 feet in length, and proves highly auriferous throughout. Lodes of larger size are found on this property; one, of 18 inches, gives about 7 dwts. per ton, and is intended to be worked.

THE BUSHING MINE.

The chief operations at this mine are on a large lode, (similar in character to that recently found at Isaac's Harbor, and the belt on which the Palmerston, Dominion, and Metropolitan works are established in Sherbrooke,) about 20 feet in thickness, and composed of alternate lodes of quartz and slate. The yield on this lode has been from 6 dwts. to 2 oz. to the ton, and has been opened about 600 feet, from which a large amount of quartz was crushed. Some work has been done

on what is called the Dunbrack lode, which was found to be from 12 to 15 inches in thickness, and nearly horizontal; one crushing of 22 tons gave 71 oz. Much labor was expended in draining this locality, but work had to be suspended at the time of the fall rains. Some difficulty will be experienced in determining where the permanent works should be located, in consequence of the foldings in the rocks; but on the return of dry weather in the summer that difficulty will no doubt be over come.

TOUQUOY MINE.

Work was only commenced on this mine in October last, when a small cross vein was discovered, from which one ton yielded 23 oz. of gold, and although no such return was again received, it is still worked, and it is said at a profit.

About 3 miles west from the above mines some lodes were discovered from which a small quantity of ore was crushed with fair results.

The prospects of this district are decidedly favorable, but both the Hyde and Bushing mine have reached that stage that hoisting and pumping engines are absolutely necessary.

FIFTEEN MILE STREAM

Is situated on the head waters of the east river of Sheet Harbor, near the line dividing Halifax and Guysborough counties, and about twelve miles south of the so-called Guysborough road. A large amount of prospecting has been done in this district over a large surface, and a number of workable leads found. A large number of boulders, rich in gold, have been found in this field, which is a large one, denoting the presence of valuable lodes; but little mining, however, has been done, owing in a large measure to the want of ready means of transport, the present being only winter roads, impassable in the summer excepting for foot passengers. There are two crushers in the district driven by water-power.

ECUM SECUM.

A small crusher was erected at this place by the Atlantic company, by whom a small amount of mining was done; but

it not proving remunerative, work was suspended August last. In 1868 prospecting was actively engaged in, and a good deal of gold was found in the surface boulders. On a visit in the summer I noticed, over an extensive surface, a large number of sharp and well defined ridges (extending a long distance) of quartzite, the intervening hollows composed of bands of slate and quartz lodes, (this has been proved by the openings made,) and from the success of a number of mines (such as the Palmerston and others) working in the same kind of lodes, there is every reason to believe that profitable mining operations may yet be carried on in this locality.

GAY'S RIVER.

The work at this district is confined to alluvial mining, in which a most important discovery has lately been made. Upon the works of Mr. Geo. Gay a depression was found in the bed rock, running in a southeasterly and northwesterly direction, in which a large amount of gold was obtained; which, like the *leads* found in Australia and California, is supposed to be the bed of an old water course. If in future explorations this supposition is proved to be correct, it cannot fail to have an important effect on the alluvial mining of the province.

A considerable amount of tunnelling has been done by Messrs. Werner & Tremain, Huff & Co., McLean & Co., and Mr. John Annand. The amount of gold obtained by these parties is small, they not having apparently found the lead. There is a small crusher in this vicinity, but it has not been in operation during the past year.

STORMONT.

The mining in this district during the year had almost come to a stand still, until some time in September a remarkably rich band of quartz and slate was discovered, which has been opened in different places a distance of about 600 feet. The lode consists of alternate beds of quartz and slate, and is about 20 feet in width, containing twenty-one quartz leads, from one to ten inches in thickness, all shewing gold. From

the most western opening 839 lbs. of quartz was taken and crushed, giving 2 oz., 12 dwts., 02 grs., being equal to 6 oz., 03 dwt., 17 grs. per ton; and from three openings from the Gisborne mine, a little over 5 tons were taken, which yielded 33 oz. of bar gold.

Active operations are now carried on in the latter mine, and measures are in progress to erect a first class crusher in the spring. A large amount of quartz has already been raised.

The Mulgrave company's mine has passed into the hands of Hugh Allan, Esq., of Montreal. The shaft sunk last year has not proved a success, but other lodes have been found which it is supposed will be of paying quality.

There is a good shew of gold in the alluvium near the mouth of Isaac's Harbor, but it has not been worked during the year as was expected. A company has, however, been lately organized, with the view to active operations in the ensuing summer.

At Country Harbor the operations have been limited. The only crusher built there, which was partially burnt early in the year, has, I understand, been repaired, and work again commenced on a small scale. Although the returns for this year are unprecedentedly small, yet from the fact of the discovery made in September, the new lodes found on the Mulgrave property, and the prospect of the alluvium being worked, we may confidently expect a large increase of gold from this district for the year 1870.

In a review of the business of gold mining for the past year it is proper to state that the results have not been as large as anticipated, partly, no doubt, owing to the depression of business generally, but largely to the want of skill in management, expensive modes of mining, heavy works engaged in without an adequate object, and the utter absence of any but the most simple appliances for saving pyrites, mercury and fine gold, compared with the appliances used in other quartz-mining countries. The wonder is not that the mines are not in the most prosperous condition, but that we have any at all at work; and but for the fact that a few rich spots in lodes

have been found cropping out at or near the surface, it is probable we should not have any of our gold mines in operation at the present time.

In the colony of Victoria gold mining is carried on by sinking deep shafts, and by overhand stoping almost exclusively. In this mode of mining it is necessary to have a knowledge of the paying qualities of the rock to be mined, and a capital much larger than many of our miners can command, and although much cheaper than the mode of underhand stoping, used by a large number in this province, yet I do not think that the latter method should in all cases be condemned; for until we have better appliances for saving gold the common auriferous lodes will not pay.

In Victoria these appliances are complete, and the amount of gold lost very small; mines of immense extent are worked, crushing all the quartz mined, and yielding in many cases very large profits. The stamps used are heavier than ours, from 6 to over 8 cwt. each, crushing from 2 to 4 tons per stamp in 24 hours, the results being much in favour of the heavier stamp. To overcome the difficulty in amalgamating so large a discharge of sand and water, screens are put on the stamper boxes, both front and back, with necessary appliances, thus giving double the discharge capacity used in our mills. After the screens come the copper plates, discharging into syphon boxes, then box sluices with rifles, then blanket sluices, then stir tubs and buddles for saving pyrites, and last of all the waste tub,—this soon filling up, the sand forms a screen that retains any mercury that may have escaped thus far. There is one strange fact connected with the use of this tub, that, after being in use without cleaning up for from 6 to 9 months, nuggets of pure gold have been found in it; the mass after a time collecting a large quantity of mercury charged with fine gold. From some chemical or other cause crystallization takes place, and the nuggets are formed.

Their machinery for alluvial mining is also very complete, both for the common sluicing (picking and shovelling the dirt into the sluices), and for hydraulic mining, by which the earth is broken down and sluiced away without the use of either pick or shovel. Under favourable circumstances, by the for-

mer method a man will sluice 10 or 12 tons per day, and by the latter 50 tons; and the yield per ton that will pay is so exceedingly small, even where the cost of water is more than all the other expenses combined, induces me firmly to believe that there are many places in this province in which alluvial mining could be profitably prosecuted.

In Tangier nuggets from 27 oz. (23 oz. gold) down have been found, and a large amount of earth was hauled and put through the crusher. At Indian Path a quantity has been crushed (see Mr. Waddelow's letter, pages 12, 13). At Isaac's Harbor, on and around Hurricane Island, the soil is known to be very rich. I this summer witnessed the washing of a number of pansfull; in every one of them a number of sights were obtained. At Gay's River as high as an ounce per man a day was obtained. At the Nine-Mile River, near Renfrew, a layer of auriferous sand covering a large area is known to exist; and there is no doubt that in all of the districts there are many places in which the cost of prospecting may be largely reduced, if not altogether covered by the yield,—properly made and equipped sluices, a portable engine and pump being the principle requisites to carry on the operations almost anywhere in a country as well watered as this. I would also suggest to prospectors in new districts the use of the above, with a portable battery of say two or four stamps, such as could be easily carried from place to place in the winter; then if one locality proved a failure, the machinery could be removed without much loss; if a success the means would be at hand to extract and save the gold. This arrangement would do away with the necessity of putting up permanent crushers at large cost when the rock will not pay, as has too often been the case.

A work on mining in the colony of Victoria, by R. Brough Smyth, the Secretary of Mines for that colony, has recently been published, which I cannot too strongly recommend to the notice of those engaged in mining. It gives a complete description of the different modes of mining, with plans of sluices, buddels, crushers, &c., by the operators and builders: and supplies a want in this province that I have not seen met in any other work. It is an extensive work, and contains a

large number of plates and plans, and I hope to see it in the hands of all our miners, as I am confident they would be largely benefitted thereby.

COAL MINES.

Although the coal mines are still in a depressed state, I am happy to report that the quality raised and sold during the year is considerably in advance of last year.

No new mines have been opened.

But little coal has been raised in Cumberland county, although much is expected on the opening of the Intercolonial railway.

In Pictou county the Albion, Acadia and Drummond are the principal mines in operation who have done a fair business.

In Cape Breton county the Block House, Gowrie, Little Glace Bay, Caledonia, International, Victoria, Lingan, and Sydney, are the principal mines in operation. A railway is commenced between the International mine, near Bridgeport, and Sydney harbour. This road, if extended to Louisburg, would traverse, through a large portion of its extent, a valuable coal region; and a large number of mines, now of little value (from the want of harbours) could be successfully worked. The work performed in and results obtained from the other mines in the Province have been of a limited character.

The report of the Inspector of Mines, with the usual tables, is hereby appended.

I have the honor to be,

Sir,

Your obedient servant,

ROBERT ROBERTSON.

The Hon. the PROVINCIAL SECRETARY.

INSPECTOR'S REPORT.

DEPARTMENT OF MINES,
Halifax, Jan. 18, 1870.

SIR,—

The mining operations in the Province during the past year present few new features of importance. Most of the coal mines have been worked; the production of each has, however, varied; in some it exceeds, and in others it is less than that of the preceding year. In the aggregate there is an increase in the sale of coal over that year of 58,170½ tons: and whilst a large proportion of this is due to the extended operations of the new mines, it is gratifying to note that some of the older establishments have exceeded their last year's sales and contributed to this increase. The general yield is still, however, far below the capabilities of production, and it is to be regretted that the state of the trade still offers so little scope for such an extension of the operations as by their present development most of the mines are prepared for.

In the county of

CUMBERLAND

the only mines that have been in operation are the Joggins, the Macan, the New York and Acadia, and the one opened by Mr. Black at Springhill. In the former of these, the

JOGGINS,

the two seams usually worked have been mined, the operations in the main seam being confined to the same district in the mine in which they were carried on last year, *i. e.*, the upper level between the main level and the crop of the seam. In the Hard Scrabble seam the level or adit has been extended to the east, and working places won out in the usual manner. An expenditure is returned as follows:

Adits and levels	\$240
Drains and surface works	180
Machinery	240
Houses	200
<hr/>	
Total	\$860

MACAN.

The operations at this colliery have been on a very small scale, and have been altogether in the part of the mine opened last year at the western extremity of the old workings. At a depth of about 100 feet from the crop a level has been driven 437 feet, out of which the coal is worked, on the long wall system, a distance of 70 feet to the rise. Nothing has been done in the slope formerly worked, the workings in connection with which are filled with water. The returns show an expenditure on

Machinery	\$30 40
Houses	5 00
<hr/>	
	\$35 40

NEW YORK AND ACADIA.

At this mine the workings have been extended on each side of the slope; the east level being now distant from it 300 feet, and the west level 400 feet. On the west side of the slope a shaft has recently been sunk and connected with the level to assist the ventilation, for which purpose it is used as a down-cast. When making the connection between the shaft and the drift driven from the level to the rise, a slight error in the position of the shaft led to the discovery of another bed of coal underlying the seam at present worked, ten feet.

This bed is five feet thick, including a portion of impure coal next the top; the lower part is of the following section:

	feet.	ins.
Coal	0	11
Hard band	0	4½
Coal	1	5
Slaty band	0	1½
Coal	0	11
<hr/>		
Total	3	9

A drift has been driven into this seam out of the west level, a short distance from the slope, with a view to working it, the coal being of good quality. The expenditure during the year is stated to be as follows :—

Adits and levels.....	\$319 50
Surface works, &c.....	235 00
Machinery.....	5 75
	<hr/>
	\$1060 25

SPRING HILL.

The operations in this locality have been chiefly of an exploratory character. On the seam opened last year by Mr. Black, levels have been driven a short distance from one of the shafts, and coal has been worked for landsale purposes. Eastward from the shaft explorations have for some time been carried on for the purpose of proving the position of the beds of coal, before fixing on a site on which to establish works of a substantial and extensive character. These explorations have been made both on the property of Mr. Black, and also on the areas belonging to the Hon. A. Macfarlane; and although not yet completed, they have proved an uninterrupted range of the seams for some distance in an easterly direction. The openings have been made both on the crop of the seam in which mining has been carried on, and on that of one to the north of it, the thickness of which is 13 feet 3 inches. Other seams have also been struck; the coal in all of them being of excellent quality. The subjoined analysis of the coal from the 11 ft. 3 in. seam, the one at present worked, was recently made by Mr. Hartley, of the geological survey of Canada, under the direction of Sir W. Logan. It is evidently of a very superior class.

Volatile matters, water included.....	35.39
Fixed carbon.....	60.46
Ash.....	4.15
	<hr/>
	100.00

Coke, firm and compact.....	64.60
Sulphur in coal.....	0.225

The expenditure returned is, for

Prospecting.....	\$807 34
------------------	----------

Prospecting to a considerable extent has also been carried on during the year on the arcars of Messrs. Livesey and Thompson, which, when completed, will be an important addition to the knowledge of this coal field. A joint expenditure is returned of \$1711.22. The extent and quality of the beds of coal in this district, irrespective of their very advantageous position as regards the facility of shipment by means of the Intercolonial railway, cannot but make it one of the most important in the Province; and operations, therefore, of an extensive character, may be anticipated on the completion of that portion of the line which will connect the mines with the Cumberland Basin.

PICTOU COUNTY.

The sale of coal from this county exceeds that of last year 53,360 tons. This increase is due to the extended operations of the Acadia and Intercolonial Cos., from whose mines, and those belonging to the General Mining Association, nearly the entire produce of coal in this county has been taken.

At the

ALBION MINES

the operations have been carried on in the Main and Deep seams, and have consisted of a removal of such portions of the old pillars as could with safety be worked. As the sales have been nearly altogether from this source of supply, it is gratifying to note the absence of any of those serious casualties with which operations of this character are so frequently accompanied. I regret, however, to have to report the occurrence of an accident on the 27th of March, which threatened at one time to be of serious consequence, but which fortunately has been attended only with a delay in opening out the Main seam in the new pit.

The coal was being mined in the usual way, gunpowder being used to blast it. On the occasion referred to a quantity of gas, which is supposed to have come off at a "lype" or fissure in the coal, was ignited, and in spite of every effort to extinguish it the flames set fire to the coal, and in a few minutes extended to the shaft. The workmen and boys were

fortunately got out without loss of life; their escape was, however, almost miraculous. Efforts were at once made to exclude the air, and other means were adopted to extinguish the fire. On opening the shaft, two months afterward, the timbering near the bottom was found to be so injured that it would have to be almost entirely replaced before operations could be resumed. This has been done, and the opening of the seam is now being proceeded with, the precaution being taken to use only safety lamps in the mine; the use of powder being also discontinued.

The powerful pumping engine in connection with these new works has during the year been completed, and the other arrangements necessary to the production of a large quantity of coal are also well advanced.

In addition to these preparations, a steam engine is in course of erection in the main seam at the "Forster" pit for the purpose of hauling the coal from the dip, in which direction a pair of drifts are being driven with a view to an extensive opening of the seam in that district of the mines. This engine will in a short time be completed, and the productive powers of the colliery will be thereby largely increased.

The expenditure, as per returns, is as follows :—

Surface work.....	\$2014 04
Machinery.....	4367 92
Engine and other houses.....	7150 52
Total.....	<hr/> \$13532 48

ACADIA.

At the Acadia mines the operations have, with the exception of a few tons worked in the McGregor seam in the early part of the year, been confined to the seam opened on the Carmichael area, on which the principal mining establishment is situated. The workings on this seam are conducted in a systematic manner, and the operations generally have been on a scale that places the mine in a first class position as regards productive capacity. The levels on each side of the slope have been driven nearly to the boundary, and the working places, which are yet some distance therefrom, are carried on

in the manner formerly described. Preparations are being made for an extension of the slopes to the dip, by which additional working places will be provided, and the yield of coal still further increased.

An expenditure is given in the returns as follows :

Surface works.....	\$333 48
Machinery	224 96
Houses	766 62
Railway	2546 90
Wharf.....	1383 05
Total.....	<u>\$5255 01</u>

INTERCOLONIAL.

This colliery has, during the year, been brought into that position, with respect to the yield of coal, for which the extensive arrangements referred to last year were a preparation.

The slopes have been driven further to the dip; they are now 930 feet in length. Out of these slopes three levels, 100 yards apart in the slopes, have been driven on each side, and working places won out of them.

The faces of the uppermost of the levels are now about 500 feet from the slopes; the second levels have been driven about the same distance, and the lowest 60 yards on each side. Room has thus been provided for the employment of a number of workmen, and the yield of coal from this colliery may be expected to steadily increase.

The returns show an expenditure on

Adits and levels.....	\$278 00
Surface works	362 42
Machinery	2288 31
Houses	2331 79
Total.....	<u>\$5260 52</u>

With the exception of the Nova Scotia colliery, the preceding are the only mines that have been in operation in this section of the Pictou coal field during the year. At the

NOVA SCOTIA

mine, although only a few tons of coal have been raised, extensive preparations are now being made to bring this col-

liery into a more effective condition than has for some time prevailed. A lengthy and commodious wharf has been nearly completed at Middle River; a considerable portion of the railway between the wharf and the mines has been constructed; 10 double houses, equal to 20 tenements, have been erected, and a double cylinder horizontal steam engine, of 40 horse power, has been placed in position for hauling the coal up the slope. Nothing has yet been done in the mine, but it is purposed to commence operations as soon as the engine can be applied.

The expenditure is stated in the returns to be as follows:

Surface works	\$323 20 12
Machinery	8301 43
Houses	5768 48
Total.....	<u>\$46390 03</u>

The only other mine in this county at which anything has been done is the

MERIGOMISH.

A slope has been driven in a seam overlying the one opened last year by the Pictou Mining Co. This slope is now 180 feet to the dip, and out of it at that distance a few working places have been turned.

At none of the other mines in this locality has regular mining been carried on. The Marsh colliery suspended operations early in the year; on the McKay area nothing has been done, and the Messrs. McBain have only taken out 378 tons of coal. Their returns, however, show an expenditure as follows:

Adits and levels	\$236 37
Surface work	397 51
Prospecting	392 37½
Total.....	<u>\$1026 25½</u>

ANTIGONISH.

At the Messrs. McKinnon and Chisholm's mine in this county, the operations have not yet proceeded much beyond

the prospective stage; the presence of some faults near the crop of the seam having impeded their progress. A fresh opening is, however, being made, and other steps have been taken to put the mine in a working position. The expenditure is stated to be on

Adits and levels.....	\$436
Houses	60
Prospecting	94
<hr/>	
Total.....	\$590

CAPE BRETON.

Although the sale of coal in Cape Breton exceeds that of last year, few of the mines have been in that active operation for which by their general arrangements they are fitted.

In Inverness and Victoria counties the only mining operations have been at the Chimney Corner, Black Rock, and New Campbellton mines. The Port Hood colliery has remained in the same condition as reported last year. The explorations by Mr. Lawson were discontinued in the early part of the year, and no further steps have been taken to open the seams in that locality.

Considerable progress has been made in preparing the Chimney Corner mine for more effective operations. A slope has been driven from the surface in one of the seams, and a steam engine has been erected for the purpose of hauling and pumping. The other arrangements necessary to place the mine in working order are also nearly completed. The expenditure is returned as follows:

Slopes	\$1334 00
Adits and levels.....	625 00
Surface works.....	4993 80
Machinery.....	1870 00
Houses.....	4140 00
Prospecting	120 00
Wharf	500 00
<hr/>	
\$13582 80	

In the

NEW CAMPBELLTON

colliery the tunnel seams have been worked for a short time ; the operations, however, were of so limited an extent that the position of the workings is very little altered.

A similar inaction has prevailed at the Matheson and Collins mines. At each of them a few tons only of coal have been raised. The

SYDNEY MINES

have as usual maintained their position as one of the most extensive mining establishments in the Province. The only seam that has been worked during the year is the Main seam, in which the operations are carried on with much regularity. In no respect do they present any change of importance. The submarine workings are being successfully continued, and have hitherto presented no difficulty in prosecuting them in the ordinary manner. They now extend over an area of nearly 12 acres on the northern side of Cranberry Head, and of 22 acres under Lloyd's Cove.

Considerable progress has been made at the new works : the massive stone building required for the powerful pumping engine has been completed, and the erection of the engine is being proceeded with. The hoisting engine has also been placed in position, and the other necessary arrangements are being made for getting the water out of the shafts, and resuming the sinking operations. The returns show an expenditure as follows :

Surface works.....	\$4685 30
Machinery.	6135 60
Total.....	<u>\$10820 90</u>

VICTORIA.

The commencement of this colliery in 1867 was attended with much interest in consequence of the peculiar position of the areas as compared with other mining operations. The areas being entirely submarine, it was the first attempt to work coal so situated by means of a slope from the crop.

The operations, however, were not impeded by any difficulty of importance, and the practicability of mining under such circumstances was fairly established. The slopes have been driven 300 feet to the dip, levels have been won out of them, and working places provided in the usual manner. During the year the surface erections have been considerably extended, a larger pumping engine has been put into operation, and another hauling engine applied to the east slope. The arrangements for screening the coal have also been nearly completed, and in other respects the colliery is rapidly assuming an important aspect. In the mine, however, I regret to say the operations have not been conducted with that care which the circumstances of position required; a larger proportion of coal than was warranted by the thickness of the strata between the bed of the sea and the seam has been injudiciously removed, and although no immediate danger may be apprehended, an extension of the workings to the dip would, I consider, be attended with risk. I felt it, therefore, to be my duty to call attention to the position of the mine, and to recommend such steps to be taken as will tend to the security of the mine and the safety of those employed in it.

Meantime the railway to connect the colliery with the shipping place at Sydney South Bar is being constructed, and it will probably be in operation in a few months. From the quality of the coal at this mine, and the energy of the proprietors, it may be safely augured that extensive operations will, on the completion of the works, be steadily pursued. The expenditure is stated in the returns to be as follows :

Shafts and slopes	\$1267 00
Adits and levels	430 00
Surface works	695 00
Machinery	1350 00
Houses	5760 00
Railway	8000 00
Total.....	<u>\$17502 00</u>

LINGAN.

The operations at this colliery have been of the ordinary character; the workings have been conducted in the usual

manner, and nothing has occurred in connection with them to require especial remark. The sale of coal, it will be observed, is in excess of last year, but it is still far beneath the capabilities of this establishment.

The erection of the steam engine at the Barasois was completed early in the year, and operations have since been regularly carried on in the seam. An additional slope is in course of driving for the more efficient ventilation of the workings as they are extended, and other arrangements are in preparation for working the mine on a larger scale. The following is the expenditure as per returns :

Adits and levels	\$1205 87
Drains, &c.	91 00
Machinery	737 82
Houses	327 05
Wharves, &c.	443 00
Total	<u>\$2804 74</u>

INTERNATIONAL.

This colliery has been worked only a few months of the year. The workings are in consequence very little altered in extent. The disadvantage of an uncertain shipping place, from which this mine has for some time suffered, is in course of removal by the construction of a railway from the mine to Sydney. This is being very vigorously carried on, and there is every probability that it will be completed in the course of the present year; the position of this mine will then be very materially altered, and its productive capacity will have ample room for extension. The expenditure is as follows:

Adits and levels	\$76 30
Surface works	198 15
Machinery	65 00
Total	<u>\$339 45</u>

CALEDONIA.

The sale of coal at this colliery has much exceeded that of last year. It is still, however, far below the means of supply provided by the general arrangements. The workings have

been extended chiefly to the rise, and are in the usual form. A shaft has been sunk to the seam a short distance from the crop with which the workings are now connected; and the ventilation of the mine is by means of a furnace at the bottom of this shaft, more steadily maintained. The expenditure, as stated in the returns is, on

Shafts.	\$ 742 69
Houses, &c.	133 05
Prospecting.	18 60
	<hr/>
	\$ 894 34

LITTLE GLACE BAY.

It is to be regretted that the capabilities of this extensive colliery should still continue dormant. The operations during the year have been very limited in extent. Mining has been carried on in both the Hub and the Harbor seams in the usual manner. The area of the workings is, however, very little increased in size. The returns show an expenditure as follows :

Adits and levels	\$634 97
Houses	677 77
Wharves	1271 38
	<hr/>
Total.	\$2584 12

CLYDE.

At this colliery mining has been carried on during the greater part of the year, the operations having consisted of an extension of the upper east level, which is now about 200 yards from the slope, and of the usual working places in connection with it. In the lower level nothing has been done, and the workings are still filled with water. The expenditure, as per the returns, is

Adits and levels	\$48 57
Surface works.	3372 18
	<hr/>
Total.	\$3420 75

SCHOONER POND.

Mining was resumed at this colliery in July last, and a few tons of coal were taken out. The difficulty of shipment, however, prevented a continuance of the operations, and they are again suspended. The returns show an expenditure on

Adits and levels.....	\$40 00
Wharf, &c. >.....	317 67
Total.....	<u>\$357 67</u>

BLOCK HOUSE.

This mine has this year resumed the position which, as regards its capabilities of production, it had, until last year, held. Mining has been vigorously carried on, and the sale of coal considerably exceeds that of last year. The extension of the workings in the mine is in correspondence with this increased yield of coal. They present, however, no change of any moment. The operations are carried on in a systematic manner. An expenditure is returned as follows:

Surface work, &c.....	\$2656 00
Houses	1200 00
Total....	<u>\$3856 00</u>

GOWRIE.

The operations at this colliery have been of the usual active character; mining is steadily pursued, and the extent of workings considerably increased. These have been in the districts of the mine generally worked; the east level being now about 500 yards from the shaft, and the west level upwards of 900 yards. The working places in connection with these levels are driven to the rise in a regular manner and in the usual form. The seam does not vary much in size, nor is there any change in the mine that need be noted. Some prospecting operations have been begun to the west of the present openings, on the northern crop of the beds; a seam of coal has been exposed, with other results of a satisfactory character. The following is stated in the returns to be the expenditure during the year:

Addits and levels.....	\$400 00
Shafts	50 00
Surface works.....	150 00
Machinery.....	280 00
Houses	550 00
Wharf	150 00
Prospecting	500 00
Breakwater.....	1290 00
Total.....	<hr/> \$3370 00

SOUTH HEAD.

This mine has been inoperative the whole of the year. The temporary wharf erected for shipping the coal was destroyed by a gale in the early part of the year, and no attempt has been made to renew it; nor has any mining been done.

At none of the recently opened mines have any operations of moment been begun or carried on. A few tons of coal have been taken out of the Gardener colliery of Messrs. Brookman and Moseley, and by Mr. Lorway out of his area; but nothing has been done towards the equipment of the mines in a manner to enable larger quantities to be worked.

Several of the areas on which these seams have been opened are some distance from a shipping place; and this position has doubtless hitherto tended to retard their development. This impediment, it is hoped, however, is in course of removal, and a means of shipment at Sydney will, it is expected, in a short time be provided. The construction of a railway between Glace Bay and that port cannot fail to materially influence the mining operations in its locality, or to impart to some extent a renewed vigor to the trade.

RICHMOND COUNTY.

The mines in this county are in the same condition as reported last year. At neither the Sea Coal Bay nor the Richmond collieries has there been any mining or any movement with a view to the resumption of work.

GOLD MINES.

Mining has been pursued in the different localities during the year with that irregularity in the operations which has hitherto characterised this branch of industry. In some districts they have been resumed with satisfactory results, and in others there has been an entire suspension of those in hand.

OVENS.

Almost the only mining carried on in this district has been by Messrs. McKay and Ross, whose operations have been in the Bent and other lodes formerly opened on the McCulloch areas. The lodes have been stoped to various depths in the usual manner.

At Indian Path the Messrs. Waddelows' operations have been chiefly of a prospective character. Several lodes have been exposed, but no regular mining has been carried on.

At

GOLD RIVER,

near Chester, extensive explorations have been carried on during the year by Mr. Michel, by whom I have been furnished with a report of their extent and results. Upwards of 2000 feet of trenching has been dug, and 10 shafts have been sunk, to depths varying from 15 to 30 feet, and tunnels driven between them. The following extract from his report is a statement of the result of the operations:

"1st. The discovery of five leads, of which four appear to be the continuation of those already known on the banks of Gold river in other properties. These leads, which measure from 2 to 5 inches, all contain visible gold, and often in notable quantity. My mechanical assays, which have been made on nearly 500 lbs. of quartz, powdered and washed with care, or amalgamated, as also the assays of Dr. Dana Hayes, of specimens in which no gold was visible, give to these leads a mean yield of \$20 per ton.

"2nd. The encounter, either at the surface of the ground, or

buried at the depth of several feet, or numerous boulders of quartz, more or less large, in the most of which the gold is visible. Several of these boulders, when powdered and washed, are very rich in gold. The principal ore, coming from a lead not yet found, of 9 to 12 inches thickness, contains several dollars worth of gold in sights.

"3rd. The washing, by rocker of the gravel coming from the neighborhood of the leads, or from the bank of Gold river, has had the result of separating a quantity, more or less considerable, of specks of gold. This exploration will probably be continued next year. The leads appear to grow richer toward the west."

RENFREW.

Mining in this district has not been to the usual extent, the operations, both of the Ophir and Colonial Cos., having been on a somewhat reduced scale. On the North lode the Ophir Co. have sunk their No. 5 shaft 130 feet further, but have not continued the stoping beyond the depth at which it stood at the end of last year. The portion of the lode left next the surface has, however, been entirely removed, and operations on this lode are at present totally suspended. The No. 5 shaft on the south lode has also been sunk further; it is now 342 feet deep. On the west side of this shaft the lode has been stoped 145 feet in length, and connected with a shaft on the Colonial Co.'s property. This shaft the Ophir Co. have purchased, and sunk to a depth of 220 feet. On the McClure lode the No. 2 shaft has been sunk 92 feet further, and the stoping continued in the usual way, 115 feet in length on the east side of the shaft, and 255 feet on the west. Little has been done during the year on the Brook lode, and operations on it have for some time been discontinued.

The Colonial Co. continued to mine the north lode until the stoppage of the Ophir Co.'s operations on that lode, when they were obliged, in consequence of the influx of water, to cease working. The shafts have been sunk deeper, No. 1 being now 200 feet, and the lode has been stoped a distance of 100 feet to the west of that shaft.

On the McLeod lode another shaft has been sunk, the depth of which, and of the one begun last year, is 100 feet. At a depth of 40 feet tunnels were driven east and west, and th

lode stoped to a height of 15 feet; it is now being worked, by underhand stoping, a distance of 100 feet. South of the McLeod lode two shafts have been sunk on a lode, the thickness of which is 8 inches. One of these shafts is 30 feet deep, and the other 50 feet. In the latter the lode has been stoped to the west 60 feet. At a depth of 35 feet a tunnel has been driven to the east 25 feet, and stoping begun.

In the Free claim operations have been carried on by Mr. W. Gay. The lodes have been worked in the usual manner, and with satisfactory results.

OLDHAM.

The operations in this district have recently been extended by the reöpening of some of the mines which have not been worked for some time. During the greater part of the year the principal mining has been carried on by the Sterling Co. This Co. now own the property on which Mr. Shaffer worked the Barrel lode last year, and have continued operations on it. It has been worked by underhand stoping to a depth of 230 feet in the main shaft, and about 180 feet in length. On the east side of this shaft the position of the lode is altered by a fault, by which it appears to be thrown to the south. A cross tunnel is in course of driving in this direction, at a depth of 108 feet in the shaft, and 36 feet on the east of it. This tunnel is now 140 feet in length; it has passed through several lodes, which are, however, irregular in position. A short distance to the north of these operations the Co. have commenced to work the Frankfort lode, on which nothing has been done for some time. It was formerly mined to a depth of 40 feet, and about 150 feet in length. The shafts have been repaired, and the lode is being stoped along nearly the same distance. A steam engine is about to be erected in a position to allow of its being applied to hoist and pump at both these mines. The same Co. have also begun to work the Wallace lode, formerly opened on the English Co.'s property. It had been mined to a depth of 70 feet and 150 feet in length, and nearly the same extent of stoping is being carried down. On the Ritchie lode also some mining was done during the year by

this Co., one of the old shafts on it having been sunk 20 feet further. Operations are, however, at present suspended.

Operations have within the last three months been resumed on the same lode in the adjoining property to the west by Mr. Coxetter, who has thoroughly repaired the shafts formerly sunk on it. The lode had been stoped from the surface to a depth of 75 feet. Since Mr. Coxetter commenced the central shaft has been sunk 75 feet further, and a length of stoping of about 150 feet has been worked.

East of the Sterling Co.'s operations, on the Barrel lode, a similarly formed lode has been mined by Mr. Shaffer, Mr. Macdonald and others. By the former it has been worked to a depth of 30 feet, and about 40 feet in length. On the adjoining area to the south Mr. Macdonald has worked, by underhand stoping from the surface, to a depth of 80 feet, and about the same distance in length. Operations on a small scale have also been carried on in a lode of the same character further west.

The lodes in this part of the "diggings" bend round from an easterly to a northerly strike, and are on the south side and east end of an anticlinal, having a resemblance to that at Waverley, which Mr. Burkner's operations have so well developed.

Explorations in various parts of the district have been made by Messrs. Bunker and others, but no regular mining is being carried on. The Messrs. Fraser and McBain continued their operations for a short time on the lode reopened by them last year; they are now, however, entirely suspended.

Considerably to the west of these last Mr. Donaldson has recently opened a lode on which a shaft is being sunk.

WAVERLEY.

This district has not yet resumed that position which it formerly occupied, and the operations are still on a small scale in comparison with their former extent. The Boston and Nova Scotia Co. and the Taylor Co., now united and termed the American Hill Co., have continued to mine the lodes formerly worked by each Co. There has not, however, been any

extension of the works; and the mining operations have consisted principally of a stripping of the lodes at various parts of the mines where they had been left in the earlier operations.

The Waverley Co. have also worked to a small extent the North Taylor lode, some stoping having been done on the west side of the east shaft. The mining generally has been of a similar character to that described, the position of the mine being unaltered. These mines are situated on the east side of Muddy pond. On the west side, adjoining the extensive workings of Messrs. DeWolf and Co., the North American Co. have sunk a shaft on the North Tudor lode, between two others on the same property. This shaft is now 80 feet deep, and the lode has been stoped from about 6 feet from the top of the rock to this depth. It is being mined by underhand stoping, an extent of 30 feet being worked on each side of the shaft.

Nothing has been done during the year on the lodes formerly worked by Messrs. DeWolf & Co., and their operations have been confined to prospecting on different parts of their property. Lodes have been partially opened of a more or less promising character, but no regular mining has yet been begun. During the last month they have, however, resumed the working of the Barrel lodes. A short distance west of his workings on the Tudor lode, Mr. Burkner has sunk a series of shafts on a lode ranging in a somewhat parallel direction with the South or Nigger lode, formerly worked by him. Five shafts are being sunk on this lode, their present depth being about 50 feet, and the lode is taken out by underhand stoping the entire range of the shafts, with the exception of a bulkhead or divisional piece, 4 feet thick, which is left in the centre of the space between each shaft. The lode varies in thickness from 12 to 5 inches; it dips to the north west. The trending of the strike of this lode towards the north and east has been followed from the shafts to within a few feet of the old workings on the Tudor lode, and its identification with that lode been established; and the construction assigned by Professor Hind to this part of the Waverley district confirmed.

Mr. Burkner has also recently resumed operations on the south lode, three shafts being in course of sinking. A shaft

has also been sunk 40 feet in connection with some prospecting operations.

MONTAGU.

In this district the operations have been such as will tend to revive the hopes which were entertained regarding it. Not only has mining been resumed on the property formerly held by the Albion Co., but other lodes have been opened, and are being worked with a promise of good results.

On the Montagu Co.'s property Messrs. Leckie & Co., the present proprietors, continued to mine the Belt lode during the first two months of the year. In consequence, however, of the inadequacy of the machinery to perform the work required, mining was suspended, and has not since been resumed.

Other parts of the property were then prospected, and lodes discovered, on which operations were begun and are being continued. Two lodes have been opened near the Werner lode, one of them being distant from it to the north 60 feet. On this lode, the thickness of which is 4 inches, five shafts have been sunk, varying in depth from 25 to 55 feet; and the lode has been stoped to the surface from these depths a distance of upwards of 300 feet. On the adjoining lode to the north, a thickness of rock of 11 feet separating them, two shafts have been sunk, the distance between them being 200 feet. The east shaft is now 50 feet deep, and the lode has been stoped to the surface from that depth, and 70 feet in length. The west shaft is 22 feet deep, and a length of stoping is carried down of 45 feet. The size of this lode is 7 inches.

Two shafts have also been sunk on the Werner lode, one of which is 70 feet deep, and the other 35 feet. The lode has been stoped to the surface from these depths, and taken out by open cutting 100 feet to the east of the east shaft.

A considerable extension of these works is projected. A new crushing mill of 15 stamps is in course of erection; and a more powerful engine, with hoisting and pumping machinery, is about to be placed on the Belt lode.

The reöpening of the Albion Co.'s mines by the Messrs.

Lawson is an interesting circumstance in this locality. The lode worked is the Belt, and the property adjoins that of Messrs. Leekie & Co. on the east. There are 9 shafts on the lode, the deepest of which is now 120 feet. From this shaft the lode is worked by underhand stoping about 220 feet to the west and 100 feet to the east, the shafts at the extremities being about 50 feet deep. The lode has been taken out from these depths to the surface. At the central and deepest shaft a steam engine, with hoisting and pumping gear, of a simple and effective character, is applied; and the operations generally appear to be conducted with skill and economy.

Prospecting operations have been carried on at different periods during the year, in various parts of the locality, by Messrs. DeWolf, Temple & Salter, Jennings and others.

TANGIER.

The steadiness with which mining has been carried on by the Strawberry Hill Co. is a cheering feature in the operations in this district. This Co. have continued to mine the Forrest lode, on which two additional shafts have been sunk during the year, to the east of those in use last year. These shafts are 65 and 35 feet deep, and the lode has been stoped nearly to the surface from these depths, a length of underhand stoping of 40 feet being carried down in each shaft.

Between the next two shafts to the west, a tunnel has been driven at a depth of 100 feet, and the lode has been stoped from it to a height of 25 feet. On the west side of this tunnel the lode has been mined by underhand stoping to a depth of 150 feet from the surface, and 170 feet in length.

About 70 feet north of the Forrest lode, and near the present eastern extremity of the workings on that lode, another lode has been opened by three shafts to a depth of 30 feet. This lode is 2 feet thick.

On the Wallace lode the tunnel is now 300 feet in length, and is being continued further.

Operations have, during the last six months, been resumed on the Leary and Nigger lodes by the Burlington Co. On the Leary lode the principal work done has been the sinking of

the west shaft a few feet further, and the preparation of the mine for regular underhand stoping, which is now being carried on. Tunnels have been driven 25 feet on each side of the shaft adjoining on the east of the westernmost one on the range, from a depth of 125 feet; and the lode has been stoped from the surface on the east side of the west shaft to a depth of 30 feet. It is also being stoped to the west above the west tunnel, at a depth of 50 feet.

On the Nigger lode one of the old shafts has been sunk 30 feet deeper, and a tunnel has been driven to the west 164 feet. No stoping has yet been commenced. East of this shaft the lode has been stoped a height of 15 feet and about 90 feet in length, and the work connected with the former operations. Other lodes have been opened by this Co. to the south of the Leary. On one of these, about 25 feet from it, a shaft has been sunk 45 feet, and the lode been stoped 25 feet on each side to a height of 12 feet. The thickness of this lode is 9 inches.

A shaft has also been sunk 47 feet on a lode further south, at which depth a tunnel has been driven 100 feet on each side; but no stoping has yet been begun. This lode is 7 inches thick.

Prospecting operations have been continued during the year by Messrs. Barton and Estey, a drift having been driven on a portion of their property 200 feet across the course of the lodes. Several lodes were cut of a promising appearance. Some of them have been partially worked.

At Mooseland mining has been almost entirely suspended. Recently, however, some prospecting on the property of the Beneficiary Co. resulted in the finding of a lode of very rich quartz. There are other lodes in this locality which seem to be worth attention. On some of them operations are about to be commenced, and mining of a more steady character than has yet prevailed may be anticipated.

SHERBROOKE.

The mining operations in this important district have not been to that extent which might have been expected from the

additional mines that were opened last year. By many of the new companies very little mining has been done. The other establishments have, however, maintained their position.

The Wellington Co. have continued to mine the Cumminger lode. Their west shaft is now 330 feet deep, and the stoping has been carried 160 feet to the west. The operations on the lode have been principally in and near this shaft. The shafts on the Dewar lode have also been sunk deeper, and are now from 75 to 50 feet, the deepest being at the west end of the workings. The lodes in these mines are taken out by underhand stoping, and the operations are carried on in a very regular manner. Little has been done by this Co. on the Hayden and Derby lode. A cross tunnel is being driven out of it to the south, from a depth in the shaft of about 75 feet; and out of a lode lying 4 feet to the north of the Hayden lode a cross tunnel has been driven 150 feet to the north. This tunnel is situated about 50 feet to the east of the shaft. The south tunnel only is at present worked. Adjoining the Wellington Co.'s operations, on the Dewar lode, the Rockville Co. have two shafts on that lode, each of which is 90 feet deep. The lode is stoped to the surface from this depth, and it is now being worked by underhand stoping a length of 70 feet.

On the New York and Sherbrooke Co.'s property the mining has been chiefly of a prospective character. Some lodes have been opened to the south of that formerly worked by this Co., on which operations have been carried on to a small extent, consisting principally of open cutting. Other lodes have recently been opened to the north of the old lode, which are likely to be very productive.

The Delta Co. have only partially worked the lodes opened last year. The two shafts have been sunk deeper, and are now 60 feet and 73 feet respectively, the former having been sunk 30 feet last year. Out of this shaft, at a depth of 56 feet, a tunnel has been driven to the north 53 feet, and a little stoping done. In the other shaft, at a depth of 68 feet, a cross tunnel has also been driven 33 feet to the north. Operations in both places have been discontinued for some time.

The Crescent Co. have done very little since February last.

The northernmost shaft has been sunk to a depth of 50 feet, but no tunnelling or stoping has been commenced. Out of the next shaft to the south, and at a depth of 35 feet, a cross tunnel has been driven to the south 6 feet into a small lode. And the third shaft, 120 feet to the east, has reached a depth of 47 feet. Considerably to the west of these properties the Stanley Co. have opened some lodes, three of which dip slightly to the south, and one to the north. The northernmost of the three is 8 inches thick, with 18 inches of slate on each side. A shaft has been sunk on it to a depth of 45 feet. South of this lode 50 feet, a shaft has also been sunk 50 feet on a lode 5 inches thick, with 12 inches of slate on the north side; and further south 150 feet a lode 12 inches thick has been worked in several places by open cutting. The other lode, the thickness of which is 2 feet, is to the north of the 8-inch lode. A shaft has been sunk on it 40 feet. No operations are at present carried on at any of these places.

The Dominion Co. have continued to work the Palmerston lode, which appears to be unaltered in any respect. A width of about 18 feet, and a height of from 25 to 30 feet, is being mined in an easterly direction from the bottom of the shaft, the depth of which is 128 feet. The face of the work is about 130 feet from the shaft.

West of the Dominion shafts the Palmerston lode has been mined by the Palmerston Co., the operations consisting of the removal of the upper portion of the lode which was left next the surface. This has been entirely removed up to the western limit. It is now being worked towards the eastern boundary.

Nothing has been done on the North Palmerston lode.

The Metropolitan Co. have also taken out the Palmerston lode to the surface over the extent of their areas. The other operations of this Co. have been on the Archibald and Hewitt lodes. In the former of these the lode has been stoped 25 feet to the east, and to within 8 or 10 feet of the surface, from a depth of 35 feet. In the Hewitt lode the only mining done has been the driving of the cross tunnel 80 feet to the south.

On the Kingston and Sherbrooke Co.'s property nothing has been done beyond the sinking of the two shafts 25 feet further. They are now from 70 to 75 feet deep.

The Meridian Co.'s operations have been on the Stryker lode, which was cut in a cross tunnel to the north out of the Sears lode, from which it is distant 30 feet. Tunnels have been driven east and west in this lode about 30 feet, but no stoping has been done.

The Chicago Co. have two shafts on the Sears lode; one of these, the east one, which is an old shaft, is 80 feet deep, and the west one 25 feet. Out of the east shaft a cross tunnel has been driven to the north 65 feet, and another to the south about 60 feet. The lode is stoped 50 feet on each side of the east shaft, 9 feet from the surface. North of the Sears lode 24 feet a shaft has been sunk 64 feet on another lode. Tunnels have been driven from this depth 100 feet to the west, and the lode stoped to within 24 feet of the surface. Further north, about 150 feet, the same Co. have a shaft on the Ferguson lode 35 feet deep; and east of it, on the same lode, another 70 feet deep. They have also made other openings, chiefly of an exploratory character.

The operations of the Canada Co. have been to the same limited extent as the preceding. The shafts have been sunk a little deeper; one of them, on the Milroy lode, being now 72 feet, and the two others, on the large lode, 200 feet south of the Dr. Hea lode, 64 feet and 36 feet respectively. In the Milroy lode tunnels have been driven, and the lode stoped 70 feet on the east side of the shaft, and 40 feet on the west, to about 30 feet from the surface; and at a depth of 50 feet in the east shaft, on the large lode, cross tunnels have been driven 20 feet each way on the north and south sides of the shaft. Machinery for hoisting and pumping has been erected during the year.

The openings on the property of the Wentworth Co. have been similarly extended. On the Cartwright lode, the northernmost one opened, the shaft has been sunk 25 feet further, and is now 65 feet deep. No other work has been done on this lode. The shafts on the Ferguson lode have also been sunk deeper, the east one being 60 feet and the west one 72 feet. A tunnel has been driven 42 feet to the west of the west shaft; and on the east side of the shaft the lode has been stoped between the two shafts to within 25 feet of the surface.

The shaft on the lode further south has also been sunk 30 feet, and is now 70 feet deep. An engine for hoisting and pumping has been erected near the shafts on the Ferguson lode.

The only work done by the Coburg Co. has been the sinking to a greater depth of the shaft begun last year. It is now 130 feet. Hoisting and pumping machinery, worked by steam, has also been applied at this mine.

The Caledonia and Woodbine Co.'s operations have been principally on the Woodbine and Blakie lodes; the three shafts, in the former of which have been sunk by the Woodbine Co. to the depths of 75, 45 and 31 feet respectively, ranging in an easterly direction. Between the west and middle shafts, which are 90 feet apart, the lode has been stoped nearly to the surface, from a depth of 60 feet in the west shaft to a depth of 30 feet in the middle shaft. On the Blakie lode, 15 feet to the north of the Woodbine, there are now two shafts, the eastern one of which is 50 feet, and the west one 75 feet. About midway between these shafts tunnels have been driven in the lode 20 feet, on each side of a cross tunnel which is connected with the west shaft on the Woodbine lode. On the middle lode, lying to the north of the Woodbine the shaft has also been sunk 30 feet further, and is now 70 feet deep.

The Caledonia Co. have sunk a shaft on the Blakie lode 40 feet, from which a cross tunnel has been driven 75 feet to the south without cutting any lodes of importance.

A lode has recently been opened by Mr. McKinnon to the south and east of these operations. This lode is 12 inches thick. A shaft has been sunk on it 30 feet, and an open cutting been made about 40 feet in length.

COCHRAN HILL.

Operations have been extended in this locality during the year, additional lodes having been found and opened. A shaft has been sunk on a belt of lodes 8 feet thick by the Cochran Hill Co.; this shaft is 100 feet deep. No stoping has been done out of it, but a portion of the belt is being

taken out by open work on each side of the shaft. Openings have been made by the same Co. on a 5 feet belt, lying 12 feet to the north. Other lodes, north of the last named, have been opened by Messrs. Kirk & Co., on which shafts are being sunk; and 15 feet further north Mr. James McDonald has begun operations on another belt.

WINE HARBOR.

Mining in this locality is still of a fluctuating character, little having been done in some of the older mines, whilst those begun last year have been carried on with more or less regularity during the year.

On the Napier Co.'s property, adjoining and including that formerly held by the Provincial Co., three shafts have been sunk, the central one of which is between two lodes; the eastern shaft being on the north lode, and the western on the south lode. Out of the east shaft cross tunnels have been driven north and south. In the north one another lode has been cut, which has been mined a short distance on each side of the tunnel. An engine is applied to hoist and pump at these shafts in a very effective and economical manner. The Eureka Co.'s operations have been confined to the Eureka lode, on which two shafts were sunk last year. These have not been sunk any deeper, but the lode has been stoped between them to about 20 feet from the surface, and to the depth of each shaft. On the east side of the east shaft at its depth, 100 feet, a tunnel has been driven 75 feet, and the lode stoped 35 feet in length to a height of 25 feet. On the west side, and at the same depth, cross tunnels have been driven north 25 feet and south 40 feet. In the last named, at a distance from the shaft of 30 feet, a lode 5 inches thick was cut, and tunnels were driven in it in an east and west direction about 30 feet each way.

On the lode opened by Mr. McIntosh the Globe Co. have carried on operations. A belt of lodes 11 feet thick has been worked by open cutting along an extent of surface of about 420 feet, the extreme depth being 60 feet. A shaft is now being sunk on the lodes, and a length of underhand stoping of

40 feet is being carried down. The Co. have also opened a six-foot belt of lodes, and have taken out by open cutting a length of 30 feet to a depth of 35 feet.

The Eldorado Co. have begun a shaft on each of the last-named belts; they have also completed the tunnel, in making which they have been engaged for some time. On the lode into which this tunnel has been driven a shaft has been sunk 74 feet, and on each side of it the lode is being stoped nearly to the surface.

Nothing has been done by the Orient Co. on their property near the Barasois, operations having been entirely suspended the whole of the year.

STORMONT.

In this district the Mulgrave Co. have continued their operations on the Mulgrave lode. The west or No. 1 shaft has been sunk 70 feet further. It is now 320 feet, and is at present standing at that depth. The No. 3 shaft has also been sunk deeper, and the stoping carried on in connection with it.

A considerable extent of prospecting has been done during the year on this Co.'s property, resulting in the finding of several lodes. On one of these, about 437 feet to the south of the Mulgrave, two shafts are being sunk, one near the shore and the other about 900 feet east of it. Other openings have also been made on this lode between the shafts. Lodes have also been found on the north of the Mulgrave.

South east of the Mulgrave property a belt of lodes has recently been opened by Mr. Buckley. This belt is upwards of 14 feet thick, and contains lodes varying from one inch to ten inches. Openings have been made on this belt over an extent of 600 feet; and preparations are being made for active mining, the quartz being highly auriferous.

At Seal Harbor prospecting has been continued. The lode from which the rich boulders which have been found in the locality are supposed to have come, has not yet, however, been found. The difficult character of the ground for prospecting has retarded the operations, but strong hopes are entertained of finding it in the ensuing spring.

The operations at Country Harbor, though not yet of much extent, are progressing very favorably. Lodes varying from 2 inches to 12 inches have been opened on the properties of Messrs. Cameron, McLean, and Kent. By the former two shafts have been sunk; one of them, the west one, being 20 feet, and the other 45 feet deep. On the McLean areas, adjoining on the east, a shaft is also in course of sinking to one of the lodes on the Cameron area; and on a 12-inch lode lying to the north of these, a shaft has been sunk 31 feet in an area also belonging to Mr. Cameron.

LAWRENCETOWN.

The only operations of any importance in this locality are those of the Westminster Gold Mining Company, the purchasers of the property formerly held by Mr. Werner. The Co. have made considerable alterations in the mining arrangements; a new crusher has been erected, which is driven by a turbine water wheel, and machinery for hoisting by a similar power has also been applied. During the construction of these, mining has been carried on in the Nickey lode, on which there are three shafts. One of these, the west one, has been sunk 26 feet further, and is now 90 feet deep. Out of this shaft the lode has been stoped on each side, a distance of 170 feet being carried down by underhand stoping. A new and capacious shaft is also being sunk in the centre of a belt of lodes—it is now 62 feet deep. From this shaft cross tunnels are about to be driven to the north and to the south to intersect the lodes. The arrangements generally indicate a desire to give to the operations a character which may be worthy of imitation.

MOUNT UNIACKE.

The operations in this largely developed district have not been to that extent which might have been expected from the number of mines and the length of lodes opened. Several of the mines have been worked only a short period during the year, and mining has not yet been resumed in them.

The Mount Uniacke Co.'s operations have been chiefly on

The lodes worked last year, the central shaft being now 230 feet deep, and the east one 200 feet. The lode has been stoped to these depths. The lode that was cut by the cross tunnel out of the central shaft has also been mined, the stoping having been extended 20 feet on each side of the shaft sunk on this lode. This shaft is being sunk deeper. The cross tunnel has been driven into the south lode, and a tunnel is in course of driving to the west in that lode.

Several lodes have been opened by the Montreal Co., by shafts varying in depths from 12 to 40 feet, in each of which the lode has been stoped a short distance on each side. These operations have been of a prospecting character, and made for the purpose of developing the property.

The only mining done by the Uniacke Central Co. has been on the north lode, on which a shaft was sunk last year. A tunnel has been driven from this shaft about 100 feet to the west, and another shaft has been sunk on the same lode 20 feet.

The operations of the Prince of Wales Co. have been on the Lumar lode, on which three shafts have been sunk, the east one being 25 feet, the middle 32 feet, and the west one 20 feet. Out of the east shaft a tunnel has been driven to the east 25 feet, and the lode stoped to within 8 feet of the surface. A similar extent of stoping has been done on the west side of the shaft. A tunnel has also been driven to the west from the middle shaft.

The Brunswick Co. have recently begun two shafts on the lode opened last year. On this lode a shaft was sunk 47 feet, and the two in course of sinking are situated to the east of it. No other work has been done during the year.

On the Queen Co.'s property the operations consist of the sinking of the east shafts on the Lumar lode to a depth of 30 feet, the lode being stoped between, and the commencement of other three shafts on the Hall lode. One of these is situated about 150 feet to the east of the last shaft, and is 15 feet deep. The other two are on the west of the west shaft.

The Westlake Co. have sunk their east shaft a few feet deeper, and extended the stoping in connection with it. Shafts have also been begun on other parts of the property. One of

these is on a lode 150 feet to the north of the lode first opened, and is 20 feet deep. On each side of the shaft an open cutting has been made 15 feet in length and 8 feet deep.

Shafts have also been sunk on the property formerly held by Mr. Burkner, and now owned by the Toronto Co.; and by Messrs. Bayne & Co. on their property. Operations on these are at present, however, suspended.

FIFTEEN MILE STREAM.

Although this locality has not yet assumed any position as regards the yield of gold, the operations are of a character to confirm the now more generally acknowledged belief in the extent of the auriferous quartz in the province. A large extent of ground has been prospected, and a number of lodes, varying from one inch to four feet six inches in thickness, have been opened, on the areas of Messrs. Lyle, Hudson, Cameron, Fish, Chipman, Doran, and Walton, and others. Trenches have been cut on most of these properties. In one of them 20 lodes were intersected in a distance of 170 feet; and in another 10 lodes in 150 feet. Shafts have also been sunk on other lodes, and regular operations are being carried on.

GAY'S RIVER.

Attention has been turned to this locality during the year: and mining operations, which have hitherto been on a small scale only, have been somewhat extended. The quartzite and slate formation is here overlaid by a bed of conglomerate, in which gold is found. It is also found in what appear to be cross lodes, to the range of the rocks, but which are very irregular in extent and position. They dip sometimes to the west and sometimes to the east. The conglomerate dips northerly.

At the commencement of operations a drift was driven a short distance into an exposure of the rocks and conglomerate in the banks of the stream. Mining has during the year been resumed in this drift by Messrs. Werner & Co. It is now about 200 feet in length. Two shafts have also been sunk to

the east of this drift, which are connected by tunnel and open cutting; and a tunnel is now being driven to the north out of the north shaft, the depth of the shaft being 27 feet. West of these openings operations have been begun by Messrs. Hopp, Salter and others, who have a drift 40 feet to the north, under the conglomerate. At this distance a tunnel has been driven a short distance to the west. Adjoining on the west the Messrs. Gay have made a similar opening, and have tunnelled to the west 100 feet.

Dr. McLean and Co. have likewise drifted to the north 70 feet, and driven a tunnel eastward 60 feet. To about the same extent, and in like manner, an opening has been made by Mr. Moor, and another is begun by Mr. D. Annand.

MUSQUODOBOIT.

The operations begun in this locality in 1867 have been steadily continued, the principal mining having been by Messrs. Bushing and Hyde. The former opened a belt of lodes, the aggregate thickness of which is 20 feet, about 10 feet being quartz and the remainder slate. The belt is separated in proceeding eastward, a portion of it branching a little to the north. At the west end of the mine four shafts have been sunk, on one of the lodes, five feet in thickness. The deepest of these shafts is 40 feet. The lode has been opened between the shafts a distance of 300 feet. Out of the west shaft, at a depth of 25 feet, tunnels are being driven east and west. Four shafts have also been sunk on the north branch, and about 300 feet of the lode has been opened in an easterly direction. Several other lodes have been opened by Mr. Burkner in other parts of his property, but the operations have been chiefly of a prospecting character.

The lode opened by Mr. Hyde is about 1000 feet to the north of Mr. Burkner's big lode. It is six inches thick, and has been mined over an extent of about 600 feet. In this distance seven shafts have been sunk, the deepest being 66 feet. The others are about 50 feet. From these depths the lode has been stoped to within six feet of the surface nearly the entire range of the openings. Explorations are being

made in various parts of this locality by Mr. Touquay and others; and a wide extent of lodes has been developed, with indications of a promising character.

The only other locality in which mining has been carried on with any degree of regularity is Cranberry Head, in the county of Yarmouth. Several lodes have been exposed. On one of them openings have been made by Messrs. Ryerson and Co. On this lode, the average thickness of which is 10 inches, two shafts have been sunk, one of them to a depth of 97 feet, and the other 47 feet. The lode has been worked by open cutting from the shore to these shafts, a distance of 600 feet, and to a depth of 20 feet. Operations are at present suspended until machinery for hoisting is erected at the deepest of the two shafts.

ACCIDENTS.

The number of accidents during the year is the same as last year, and the number of persons injured is also exactly the same; the deaths, however, are fewer. There is an increase in the number of accidents by explosions of powder, six having occurred, of which one was fatal; six persons have been hurt by falls of stone and coal, one of whom died; four were hurt by explosions of gas; three crushed by machinery and tubs, one case terminating fatally; and three were killed by falling down shafts. The following is a summary of the casualties:

No.	Date.	Name.	Name of Mine.	Cause.	Result.
1869.					
1	Jan. 14	John D. Cameron }	Provincial,	{ Explosion of powder	Recovered.
		Thomas Boggs... }	Wine Harbor		
2	Jan. 29..	Henry Hickman... }	Marsh	Fall down shaft.....	Died.
		Robert Palmer	Marsh	Fall down shaft....	Died.
3	Feby. 4..	James Leason.....	Sydney.....	Fall of stone	Recovered.
4	Feby. 15..	Frederick McEwen.	Provincial..	Crushed by machinery	Recovered.
5	March 1..	W. Harkness.....	Mulgrave..	Explosion of powder.	Recovered.
6	April 15..	John McKinnon...	Victoria ..	Explosion of gas.....	Recovered.
7	May 1..	Malcolm McLean...	Victoria ..	Explosion of gas.....	Recovered.
8	May 6..	Adam Laidlaw.....	Waverley ..	Fall of stone	Died.
9	June 3..	John Gallagher....	Caledonia ..	Explosion of powder.	Recovered
10	June 26..	Duncan McPhail...	Albion.	Crushed by tubs	Recovered

No.	Date.	Name.	Name of Mine.	Cause-	Result.
	1869.				
11	July 13..	John Bryce	Sydney	Explosion of gas.....	Recovered.
	July 13..	John Melvin	Sydney	Explosion of gas.....	Recovered.
12	July 15..	G. McPherson.....	Wellington .	Fall of stone	Recovered.
13	July 28..	D. Finlayson.....	Lingan	Fall of coal.....	Recovered.
14	Aug. 31..	R. McPherson.....	Drummond.	Crushed by tubs	Died.
15	Sept. 7..	William Hatch	Uniacke ...	Fall down shaft.....	Died.
16	Sept. 8..	Gregory Meagher..	Sydney	Fall of stone	Recovered.
17	Sept. 21.	John Way	Sydney	Explosion of powder.	Recovered.
18	Sept. 21..	Jerry Tumy	Sydney	Explosion of powder.	Recovered.
9	Sept. 22..	Benjamin Brown...	Sydney	Fall of stone	Recovered.
0	Sept. 23 .	D. McDonald.....	Drummond.	Explosion of powder.	Died.

No. 1. In this case a shot had been prepared, which from some cause missed fire, and the two men, Cameron and Boggs, were endeavoring to take out the powder with a drill, when it exploded. Boggs escaped with slight injury, but Cameron lost both his hands.

No. 2. Hickman and Palmer were coming up the shaft, at the Marsh colliery, in a tub; when they had ascended about 170 feet, the tub became detached from the hook, and they and it fell to the bottom. As they were the only persons in the pit at the time, it was their duty to see that the tub was properly attached before giving the signal to hoist. The hook was not again used till I had examined it, and there appeared to be nothing faulty about it. It can only be conjectured, therefore, that the bow of the tub had not been on the hook, but resting on the point of it, from which it slipped on receiving a jerk.

No. 3. James Leason was a deputy in the Sydney Mines, and was busy laying a tramway in one of the bords, when a portion of the roof fell upon him and broke his back.

No. 4. McEwen was engaged repairing some of the machinery at the Provincial mine, when, owing to a movement of some portion of it, his hand was severely crushed.

No. 5. This accident occurred in the following manner: Harkness and another man had partly charged a hole for blasting, when they observed that the fuse was ignited; they were able to reach a stage a short distance from where they were before the explosion took place, but Harkness appears to have been shook off by the force of the explosion, and he

fell about ten feet, among some loose rock, by which he was bruised about the head and back.

No. 6. McKinnon was burnt by an explosion of gas in the Victoria mine. He was allowed to go into his place after the pit had been unworked a few days, without being warned of the presence of the gas, and having a naked light, the usual consequence followed.

No. 7. This accident also occurred at the Victoria mine, and in a similar manner, with fortunately no more serious result than in the preceding case.

No. 8. The death of Laidlaw was caused by a stone falling down one of the shafts of the Waverley gold mining Co. He and another man were engaged drilling a hole in the rock a short distance from the bottom of the shaft. A man who was preparing tamping in the shaft heard the stone coming, and shouted to warn them. Although they were about seven feet from the bottom of the shaft, the stone, probably by a rebound, struck Laidlaw on the side of the head, and caused instant death. Whether the stone fell from the surface, or from a scaffolding, is not known.

No. 9. Gallagher had prepared a shot and lighted the fuse; but as the explosion did not take place so soon as he expected, he thought it had missed, and went close to it to examine it, when the explosion occurred. Fortunately the coal was not thrown, and he was struck only by the stemming, and not seriously hurt.

No. 10. In this case it appears the boy McPhail was climbing up a wall by the side of one of the inclines in the Dalhousie pit, when it gave way with him, as the full tubs were being run down. These passed over him, and so injured one of his arms that it had to be taken off.

No. 11. This accident was caused by an explosion of gas in the Queen pit, Sydney mines. Bryce and Melvin were engaged making a holing between two bords, one of which had been standing a short time, and was known to have a little gas near the face of it. A safety lamp was given to them by the deputy to use before cutting the coal through. With this lamp Melvin went into the bord, and finding no gas near the place where they expected to hole, he returned to

Bryce and assisted him to enlarge the opening. Subsequently he went again into the bord, but with a naked light, and having foolishly gone into the face of the bord, about three yards beyond the holing, he set fire to the gas, and the explosion occurred. Melvin was not much injured, but Bryce, being exposed to the rush of the flame through the opening made in the low part of the seam, was more seriously burnt.

No. 12. McPherson was employed in the Wellington mine at Sherbrooke. It was his duty to fill the tubs and send them up the shaft. In this instance he went into the shaft bottom before the ascending tub had reached the top, and a piece of rock falling struck him below the knee and broke his leg.

No. 13. This accident is attributed to a want of timber to support the roof coal in the place where Finlayson was working. He had been cautioned respecting the risk he was running, but being desirous to get his coal away he neglected to set some timber, and a portion of the roof fell and severely crushed him.

No. 14. The death of the boy McPherson was caused by his being run over by the loaded tubs as they were being drawn up the slope at the Intercolonial mine. He was riding on the front of the train, and when endeavoring to get off before it reached the top, to evade detection, he slipped, and falling across the track, the tubs passed over him, and so severely injured him that he died a few hours after.

No. 15. Meagher and some others were engaged clearing away a fall of the roof in the Sydney mine, and whilst so employed a large piece of stone fell and severely injured him.

No. 16. This accident occurred at the Uniacke Co.'s mine. Hatch was working in a part of the mine about 40 feet from the bottom of the shaft. When attempting to get into the tub as it was being drawn past him to ascend the shaft he slipped and fell to the bottom. Both his arms were broken, yet it was hoped he was not fatally injured. He died, however, two days after the accident.

No. 17. Way had prepared a shot which missed fire, and whilst endeavoring to get out the charge with his drill, it exploded, and he was much injured about the face.

No. 18. This was a precisely similar occurrence, the only difference being that Tummy had abstracted a larger portion of the powder before the remainder exploded.

No. 19. Brown was employed in the Sydney mine as a driver, and when hauling coal out of a narrow bord was struck by a piece of stone which fell from the roof.

No. 20. The extreme carelessness of the unfortunate sufferer, in this case, is but another instance of the recklessness which too often prevails among miners. McDonald had prepared a hole for a shot, and, it is said, went to take the charge required from the keg containing the powder while in the act of smoking. An explosion occurred, with such fatal consequences as might, under such circumstances, be expected.

There is one class of accidents in the preceding statement on which I beg to repeat the remarks formerly made. Explosions of powder are still of frequent occurrence; nor is it to be wondered at when it is evident that, to save a little trouble, miners will run such risks. In the case of a "missed shot" in coal the safest course would be to wedge the coal down, and not to attempt to take out the charge. In stone the hole takes much more time to make, and the temptation to try to draw the charge is consequently greater. It is an operation, however, that is attended with so much danger that it should be strictly prohibited by all the managers of mines. There are some, I am glad to say, who have established a rule of that character. When there is a doubt whether a shot is lighted or not the wisest plan is to give it plenty of time, and not to hurry to examine it. The prudence of the delay would seem to be so evident that a suggestion of this kind may seem superfluous; but the simplest remedy will bear repetition if it tend to prevent loss of life.

I have the honor to be,

Your obedient servant,

JOHN RUTHERFORD,

Inspector of Mines.

The Hon. ROBERT ROBERTSON,

Chief Commissioner of Mines and Public Works.

TABLES SHEWING THE NUMBER OF GOLD MINES BEING WORKED, THE AVERAGE NUMBER OF MEN ENGAGED IN MINING, THE QUANTITIES OF QUARTZ RAISED AND CRUSHED, WITH AVERAGE YIELD PER TON, AND THE TOTAL YIELD OF GOLD, &c., &c., IN THE VARIOUS GOLD DISTRICTS, FOR THE TWELVE MONTHS ENDING DECEMBER, 1869, AS PER STATISTICAL RETURNS OF THE DEPUTY COMMISSIONERS.

JANUARY, 1869.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont, "Isaac's Harbor".....	4	25	2	1	1	100	..	..	199	10	..	..	07	04	..	09	20	..	..	..	71	11	13
Wine Harbor	5	80	4	3	1	251	11	..	251	11	..	..	07	01	..	20	18	..	..	..	88	10	06
Sherbrooke	11	130	10	9	1	1200	..	..	1402	..	..	..	06	10	..	3	16	..	..	..	451	03	01
Tangier	3	46	3	2	1	9	..	..	9	..	..	..	06	20	..	06	20	..	..	..	302	..	..
Montagu	2	36	2	2	..	63	..	..	63	..	..	..	1	11	09	2	16	17	..	..	98	16	02
Waverley	3	43	4	3	1	261	..	..	289	..	..	..	08	01	..	15	14	..	..	..	117	09	..
Oldham	8	38	4	3	1	72	..	..	72	..	..	..	1	01	08	1	14	07	..	..	76	11	..
Renfrew	8	154	6	3	3	600	..	..	538	..	..	..	09	08	..	19	10	..	..	..	251	01	..
Unacke	14	110	5	5	..	388	15	..	340	15	..	..	12	15	..	2	00	19	..	..	214	19	12
Lawrencetown	2	20	2	..	2	8	..	..	8	..	..	..	09	18	..	09	18	..	..	..	3	18	..
Unproclaimed and other Districts	8	21	8	4	4	21	..	..	11	15	..	..	10	16	..	12	11	..	..	..	6	09	13
Totals.	68	703	50	35	15	2974	06	..	3184	11	..	..	08	17	..	3	10	..	..	..	1383	10	23

MARCH.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont, "Isaac's Harbour"....	4	17	2	1	1	75	..	..	1 10	..	..	03 13	..	..	03 13	..	..	..	..	..	..	05	07
Wine Harbour	6	121	5	4	1	306	08	..	306	08	..	04 11	..	..	11 06	..	..	..	..	..	68	08	17
Sherbrooke	13	120	10	9	1	1080	..	..	1080	..	..	08 22	..	..	6 09	13	..	..	..	..	482	11	08
Tangier	3	46	3	2	1	174	..	..	174	..	..	1 13	15	..	2 15	14	..	..	..	..	292	17	..
Montagu	2	33	2	2	..	20	..	..	40	..	..	..	..	..	..	..	..	..	..	..	2	02	04
Waverley	3	44	4	3	1	323	..	..	318	..	..	08 16	..	..	15 05	..	..	..	..	..	138	04	03
Oldham	10	46	4	3	1	200	..	..	83	16	..	07 12	..	..	09 13	..	..	..	..	..	31	00	12
Renfrew	8	108	6	3	3	685	..	..	685	..	..	10 01	..	..	12 06	..	..	..	..	..	343	15	..
Uniacke	10	66	5	5	..	180	..	..	199	..	..	15 11	..	..	2 15	21	..	..	..	..	154	03	04
Lawrencetown	2	20	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Unproclaimed and other Districts	8	21	8	4	4	22	..	..	27	04	..	17 12	..	3	..	..	..	..	..	..	24	01	05
Totals	69	642	51	36	15	3065	08	..	2914	12	..	10 13	..	..	6 09	13	3	..	..	..	1537	08	12

MAY.

DISTRICTS.	Number of Mines being worked.	Average No. of Men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont, "Isaac's Harbour"	2	14	2	2	2	50	..	..	71	..	..	12 14	..	..	1 16	..	..	..	..	..	44 15	07	..
Wine Harbour	4	69	5	4	1	271	..	..	256	..	..	.. 03	..	..	.. 11 01	..	..	..	..	..	79 19	22	..
Sherbrooke	12	130	10	9	1	952	..	..	952	..	..	.. 11 04	..	..	3 11 08	..	..	..	..	..	532 10	01	..
Tangier	3	51	3	2	1	111	..	..	166	..	..	.. 10 08	..	..	2 13 08	..	..	..	..	..	85 16	..	..
Montagu	2	15	2	2	..	35	..	..	35	..	..	1 04 00	..	..	2 04	..	..	..	..	..	41 17	14	..
Waverley	5	63	4	3	1	196	..	..	*478	..	..	.. 05 03	..	..	.. 15 11	..	..	..	..	..	124 01	12	..
Oldham	8	46	4	3	1	118 11	..	..	118 11	..	..	.. 16 14	..	..	2 03 08	..	..	..	..	..	95 17	22	..
Renfrew	7	115	6	3	3	417	..	..	417	..	..	.. 11 13	..	..	.. 19 08	..	..	..	..	..	239 05	08	..
Uniacke	14	66	5	5	..	429	..	..	421	..	..	.. 08 02	..	..	1 00 23	..	..	..	..	..	171 01	03	..
Lawrencetown	1	4	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Musquodoboit	2	52	2	1	1	125 17	..	..	125 17	..	..	.. 07 13	..	..	.. 16 06	..	..	..	..	..	47 16	07	..
Unproclaimed and other Districts	5	10	5	2	3	56 10	..	..	56 10	..	..	.. 04 08	..	..	.. 04 08	..	..	..	..	..	13 01	12	..
Totals	65	635	50	36	14	2761 18	..	..	3096 18	..	..	.. 9 12	..	..	3 11 08	..	..	..	..	..	1476	2	12

* 228 tons of waste from dump gave 32 oz. 05 dwt. 11 grs.

63 tons of waste from dump gave 13 oz. 12 dwt 16 grs.

JUNE.

Stormont, "Isaac's Harbour" . . .	5	12	2	2	..	80	..	..	610	..	11 23	..	11 23	..	..	..	3 15	01
Wine Harbour	4	81	5	4	1	386	07	..	386	07	..	02 07	..	08	..	..	44	10
Sherbrooke	11	130	10	9	1	853	..	..	853	..	..	11 11	1 07	..	..	..	488	19 11
Tangier	3	51	3	2	1	111	..	..	92	..	1	..	1 16	..	..	..	92	05
Montagu	3	23	2	2	..	54	05	..	54	05	..	12 14	1 05	08	..	..	34	02 18
Waverley	5	52	4	3	1	196	..	..	222	..	..	08 19	..	17 04	..	..	97	14
Oldham	10	46	4	3	1	177	05	..	177	05	..	13	..	1 06	14	..	114	12 10
Renfrew	6	116	6	3	3	625	..	..	625	..	..	08 15	..	19	..	..	270	04 18
Uniacke	17	86	5	5	..	365	..	..	355	18	..	11 13	4	..	..	..	205	12 10
Lawrencetown	1	4	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Musquodoboit	2	52	2	1	1	192	..	..	192	..	..	08 12	..	16	07	..	81	15
Unproclaimed and other Districts	6	26	5	2	3	103	..	..	103	..	..	02 08	..	08	12	56	11 17	68 11 23
Totals	73	679	50	36	14	314	217	..	3067	5	..	9 19	4	..	..	56	11 17	1502 2 19

JULY.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.			Do. Water Power.			Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
				Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.			
Stormont, "Isaac's Harbour" . . .	2	24	1	1	1	196	..	..	196	..	..	..	..	..	..	04	22	..	05	02	..	..	..	48	00	21
Wine Harbour	5	95	5	4	1	260	06	..	260	06	04	04	..	5	02	11	54	04	15
Sherbrooke	11	132	10	9	1	877	877	09	10	..	2	13	16	41	03	04
Tangier	4	54	4	3	1	58	08	..	38	08	11	01	..	1	06	13	21	15	12
Montagu	2	7	2	2	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waverley	5	51	4	3	1	200	..	..	277	..	..	..	..	..	..	09	17	..	17	16	..	..	..	13	10	20
Oldham	8	46	4	3	1	188	09	..	188	09	18	13	..	1	08	15	17	11	14
Renfrew	10	115	6	3	3	617	..	..	617	..	..	..	..	..	..	07	12	..	15	..	..	..	..	23	12	10
Uniacke	14	77	5	5	..	406	..	..	429	..	..	..	..	..	..	08	07	..	1	12	10	..	..	17	06	20
Lawrencetown	2	39	2	..	2	84	..	..	22	17	..	..	..	..	..	06	16	..	1	11	19	..	..	7	12	62
Musquodoboit	2	30	2	1	1	179	..	..	179	..	..	..	..	..	..	08	05	..	1	18	..	..	..	73	13	..
Unproclaimed and other Districts	4	40	6	3	3	21	..	..	21	..	..	..	..	..	..	02	20	..	02	20	..	..	..	3	..	..
Totals	69	710	51	37	14	3090	3	..	3106	00	..	..	8	14	..	5	02	11	..	..	..	..	..	1337	11	08

SEPTEMBER.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont, "Isaac's Harbour"	...	...	2	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbour	4	70	5	4	1	585	...	...	335	08	...	...	05	07	...	507	03	...	...	...	...	89	04
Sherbrooke	16	100	10	9	1	722	12	...	722	12	...	...	07	07	...	606	12	...	...	...	...	265	08
Tangier	4	37	4	3	1	35	08	...	38	08	...	1	12	00	...	65	02	12	...	...	...	61	16
Montagu	4	58	2	2	...	68	...	...	78	...	...	1	07	18	...	304	13	...	...	...	...	108	07
Waverley	5	51	4	3	1	204	...	...	216	...	...	12	10	...	...	16	09	...	...	...	...	134	09
Oldham	8	86	4	3	1	120	...	...	95	02	...	1	00	08	...	102	15	...	...	...	...	96	14
Renfrew	10	108	6	3	3	450	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Uniake	14	71	5	5	...	261	...	...	191	...	...	11	01	...	...	403	12	...	...	...	...	105	17
Lawrencetown	2	39	2	...	2	81	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Musquodoboit	2	30	2	1	1	164	...	...	164	...	...	13	05	...	...	115	...	...	...	...	...	108	08
Unproclaimed and other Districts	6	64	6	3	3	207	...	...	207	...	...	09	07	...	...	10	18	65	19	18	...	162	03
Totals	75	714	52	37	15	2897	0	...	2047	10	...	11	01	...	...	65	02	12	65	19	18	1132	9
																							22

* 8 Cwt. gave 26 oz. 01 dwt.

NOVEMBER.

DISTRICTS.	Number of Mines being worked.	Average No. of Men daily employ- ed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont, "Isaac's Harbour" . . .	5	37	1	1	1	114	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wine Harbour	4	13	5	4	1	121	14	..	121	14	..	..	..	..	..	..	..	..	..	..	..	..	..
Sherbrooke	17	156	11	9	2	918	16	..	918	16	..	..	..	..	..	..	..	..	..	..	..	..	..
Tangier	4	64	4	3	1	174	750	..	249	750	..	..	..	..	..	..	..	..	..	..	..	..	..
Montagu	3	33	2	2	..	32	12	..	32	12	..	..	..	..	..	..	..	..	..	..	..	..	..
Waverley	5	61	4	3	1	278	05	..	364	05	..	..	..	..	..	..	..	..	..	..	..	..	..
Oldham	8	73	5	3	2	176	03	..	176	03	..	..	..	..	..	..	..	..	..	..	..	..	..
Renfrew	9	77	5	2	3	721	10	..	721	10	..	..	..	..	..	..	..	..	..	..	..	..	..
Uniacke	16	41	6	5	1	155	..	..	192	10	..	..	..	..	..	..	..	..	..	..	..	..	..
Lawrencetown	2	18	2	..	2	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Musquodoboit	3	60	2	1	1	268	..	..	268	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Unproclaimed and other Districts	10	33	6	3	3	183	..	..	97	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	86	666	53	36	17	3201	07	50	3141	17	50	..	..	..	..	..	..	..	..	..	..	..	..

DECEMBER.

Stormont, "Isaac's Harbour" . . .	7	40	2	1	1	61	..	2605	..	0504	60403	..	..	614	03
Wine Harbour	3	14	5	4	1	186	..	186	..	0614	0913	..	..	6110	12
Sherbrooke	17	160	11	9	2	83101	..	83101	..	16	20812	..	..	67409	21
Tangier	2	64	4	3	1	12905	..	12905	..	11017	21920	..	..	19814	08
Montagu	2	33	2	2	..	9010	..	9010	..	11714	20605	..	..	17004	06
Waverley	7	61	4	3	1	341	..	47310	..	0716	1519	..	..	17618	02
Oldham	13	73	5	3	2	18204	..	18204	..	1808	21214	..	..	16618	19
Renfrew	10	77	6	3	3	74015	..	74015	..	0512	1	..	..	20408	..
Uniacke	11	33	6	5	1	150	..	2210	..	0903	1401	..	..	1003	04
Lawrencetown	2	18	2	..	2	58	..	..	..	..	..	..	..	..	..
Musquodoboit	3	60	2	1	1	93	..	93	..	17	10807	..	..	7900	08
Unproclaimed and other Districts	10	33	6	3	3	3316	..	3316	..	1005	1005	52	07	6913	..
Totals	87	666	55	37	18	289611	..	280816	..	1222	60403	52	07	181814	11

B.

STATEMENT SHEWING THE AVERAGE DAILY LABOR EMPLOYED, THE AMOUNT OF QUARTZ CRUSHED, "THE YIELD OF GOLD PER TON OF QUARTZ," THE QUANTITIES OF GOLD FROM ALLUVIAL MINES, THE YIELD OF GOLD, THE MAXIMUM YIELD PER TON IN EACH DISTRICT, AND IN THE WHOLE PROVINCE, AND THE VALUE OF THE AVERAGE YIELD OF GOLD PER MAN EMPLOYED IN MINING, FOR TWELVE MONTHS ENDED DECEMBER 31ST, 1869.

DISTRICTS	Average men employed.	(Crushing Mills employed Dec. 31st, 1869.	Steam Power.	Water Power.	Quartz, &c., crushed.	Yield per ton.	Gold from Alluvial Mines.	Total yield of Gold.	Maximum yield per ton.	Average yield per man for Twelve months, at \$18.50 per oz.
Stornont, "Isaac's Harbor".....	19	2	1	1	784 00	05 19	.....	227 00 13	6 04 03	221 00
Wine Harbor.....	65	5	4	1	2726 12	05 06	.....	719 08 19	5 07 03	204 76
Sherbrooke.....	134	11	9	2	11500 00	09 15	.....	5546 11 16	6 09 13	765 76
Tangier.....	51	4	3	1	1332 02	17 21	.....	1192 03 10	75 00 00	430 50
Montagu.....	29	2	2	..	572 07 1	08 03	.....	805 13 14	3 08 08	514 00
Waverley.....	54	4	3	1	3915 15	08 03	.....	1591 14 10	1 00 14	545 29
Oldham.....	56	5	3	2	1735 02	16 01	.....	1394 16 00	8 00 12	460 76
Renfrew.....	112	5	2	3	7258 09	08 12	.....	3097 15 07	1 01 07	497 76
Uniake.....	71	6	5	1	3171 13	11 18	.....	1867 03 12	6 04 06	345 55
Lawrencetown.....	20	2	..	2	223 00	02 16	.....	30 00 20	1 01 17	27 75
Musquodoboit.....	36	2	1	1	1582 17	12 17	.....	1001 00 23	23 00 00	514 39
Unproclaimed and other Districts	29	6	3	3	622 09	06 23	177 18 11	394 11 19	17 12	251 72
	676	54	36	18	35424 06	10 02	177 18 11	17868 00 19	75 00 00	489 00

No. 1.

STATEMENT SHEWING THE NUMBER OF MEN EMPLOYED, QUARTZ CRUSHED, AND GOLD OBTAINED EACH MONTH IN EACH DISTRICT.

MONTH.	STORMONT.						WINE HARBOR.						SHERBROOKE.						TANGIER.						MONTAGU.							
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.		
January...	25	199	10	71	11	13	80	251	11	88	10	06	130	1402	..	451	03	01	46	9	..	302	..	36	63	..	98	16	02	..	36	
February...	20	80	..	..	..	..	66	163	..	60	18	..	180	1000	..	366	13	10	46	87	..	48	03	..	33	76	..	120	16	05	..	33
March...	17	110	..	..	05	07	121	306	08	68	08	17	120	1080	..	482	11	08	46	174	..	292	17	..	33	40	..	202	04	..	..	33
April..	18	10	10	12	10	09	81	171	14	50	09	12	100	394	14	335	05	03	51	143	..	139	07	..	15	31	..	36	11	..	..	15
May...	14	71	..	44	15	07	69	256	..	79	19	22	130	952	..	532	10	01	51	166	..	85	16	..	15	35	..	41	17	14	..	15
June..	12	610	..	3	15	01	81	386	07	44	10	..	130	853	..	488	19	11	51	92	..	92	05	..	23	54	05	34	02	18	..	23
July....	24	196	..	48	00	21	95	260	06	54	04	15	132	877	..	414	03	04	54	38	08	21	15	12	7	..	..	..	..	..	..	7
August...	..	78	15	39	08	..	65	..	..	..	..	..	120	1393	..	423	00	19	39	47	..	58	15	..	25	38	..	81	08	03	..	25
September.	..	..	..	..	..	..	70	335	08	89	04	15	100	722	12	265	08	08	37	38	08	61	16	..	58	78	..	108	07	09	..	58
October	28	..	..	..	..	..	32	288	04	74	13	01	156	1076	08	594	05	20	64	158	14	70	04	..	33	34	..	67	05	..	..	33
November.	37	114	..	..	..	..	13	121	14	46	19	15	156	918	16	518	01	06	64	249	07	119	08	14	33	32	12	44	03	01	..	33
December...	40	26	05	6	14	03	14	186	..	61	10	12	160	831	01	674	09	21	64	129	05	198	14	08	33	90	10	170	04	06	..	33
	19	784	..	227	00	13	65	2726	12	719	08	19	134	11500	11	5546	11	16	51	1332	02	1192	03	10	29	572	07	805	13	14	..	29

No. 2.

MONTH.	WAVERLEY.						OLDHAM.						RENFREW.						UNIACKE.						LAWRENCETOWN.							
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.		
January	43	289	..	117 09	..	..	38	72	..	76 11	..	154	538	..	251 01	..	154	538	..	110	340	15	214	19	12	20	8	..	3 18	..	
February	44	464	..	147 10	17	..	38	134	..	117 19	14	154	633	..	315 06	..	154	633	..	94	318	10	222	08	11	20	30	10	6 10	..		
March	44	318	..	138 04	03	..	46	83	10	31 00	12	108	685	..	343 15	..	108	685	..	66	199	..	154	03	04	20	..	..	..	..	..
April	63	301	..	94 07	05	..	46	179	12	88 13	08	115	652	..	376 15	..	115	652	..	75	253	..	189	14	01	4	1	..	1 01	17		
May	63	478	..	124 01	12	..	46	118	11	95 17	22	115	417	..	239 05	08	115	417	..	66	421	..	171	01	03	4	..	..	..	..	..
June	52	222	..	97 14	..	..	46	177	05	114 12	10	116	625	..	270 04	18	116	625	..	86	355	18	205	12	10	4	..	..	..	..	..
July	51	277	..	134 10	20	..	46	188	09	174 11	14	115	617	..	231 12	10	115	617	..	77	429	..	174	06	20	39	4	..	7 12	12		
August	52	215	..	125 02	..	..	46	117	06	107 06	01	115	474	..	164 03	..	115	474	..	72	259	..	184	13	11	39	5	..	10 18	15	
September	51	216	..	134 09	18	..	86	95	02	96 14	01	108	..	..	..	..	108	..	71	191	..	105	17	10	39	..	..	..	..	..	..
October	61	298	..	158 02	..	..	92	211	..	137 02	19	77	1155	04	489	08	06	56	189	10	122	15	..	17	59	..	..	..	..	..	..
November	61	364	05	143 05	05	..	73	176	03	187 08	..	77	721	10	211	16	13	41	192	10	111	08	22	18	58	..	..	..	..	..	..
December	61	473	10	176 18	02	..	73	182	04	166 18	19	77	740	15	204	08	..	33	22	10	10	03	04	18	58	..	..	..	..	..	..
	54	391	5	159	14	10	56	1735	02	1394	16	00	112	728	09	309	7	15	07	71	317	13	186	7	03	12	20	223	10	30	00	20

MONTH.	MUSQUODOBOIT.						UNPROCLAIMED AND OTHER DISTRICTS.					
	Men.	Tons.	Cwt.	Oz.	Dwt.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwt.	Grs.
January. . . . .	...	...	...	...	...	...	21	11	15	6	09	13
February. . . . .	...	...	...	...	...	...	21	...	...	...	...	...
March. . . . .	...	...	...	...	...	...	21	27	05	24	01	05
April.	52	98	...	74	11	02	10	...	...	...	...	...
May.	52	125	17	47	16	07	10	56	10	13	01	12
June.	52	192	...	81	15	...	26	103	...	68	11	23
July.	30	179	...	73	13	...	40	21	...	3	...	...
August.	30	217	...	131	...	...	40	11	...	2	07	...
September.	30	164	...	108	08	17	64	207	...	162	03	16
October.	60	246	...	241	19	...	33	54	04	24	19	10
November.	60	268	...	162	17	13	33	97	...	20	04	12
December.	60	93	...	79	00	08	33	33	16	69	13	...
	36	1582	17	1001	00	23	29	622	09	394	11	19

C.

COAL RAISED AND SOLD IN THE PROVINCE 1 DURING THE YEAR ENDED DECEMBER 31ST, 1869.

COUNTY.	Round.	Slack.	TOTAL ROUND.		TOTAL SLACK.		TOTAL.	
	Tons.	Tons.	N. S. Proper.	Tons.	N. S. Proper.	Tons.	N. S. Proper.	Tons.
Cumberland	7648	867	.....	.....	.....	.....	.....	.....
Pictou	175286 $\frac{1}{2}$	22925	182934 $\frac{1}{2}$	.....	23792	.....	206726 $\frac{1}{2}$	.....
Cape Breton	287027	17292 $\frac{1}{4}$	Cape Breton.	.....	Cape Breton.	Cape Breton.	Cape Breton.	.....
Inverness	292	40	.....	.....	.....	.....	.....	.....
Richmond .....	.....	.....	.....	.....	.....	.....	.....	.....
Victoria	372	45	287691	.....	17377 $\frac{1}{4}$	.....	305068	.....
	470625 $\frac{1}{2}$	41169 $\frac{1}{4}$	470625 $\frac{1}{2}$	.....	41169 $\frac{1}{4}$	.....	511794 $\frac{3}{4}$	.....

RETURNS COAL RAISED AND SOLD DURING YEAR ENDED DECEMBER 31ST, 1869.

COLLIERY.		COUNTY.		QUARTER ENDED MARCH 31ST, 1869.						QUARTER ENDED JUNE 30TH, 1869.										
				Raised.		Sold for Home Consumption.		Exported to Neighboring Colonies.		Exported to other Countries.		Raised.		Sold for Home Consumption.		Exported to Neighboring Colonies.		Exported to other Countries.		
Round.	Slack.	Tons.	Round.	Slack.	Tons.	Round.	Slack.	Tons.	Round.	Slack.	Tons.	Round.	Slack.	Tons.	Round.	Slack.	Tons.	Round.	Slack.	Tons.
Jorgins..	Cumberland ..	5623	625	10	....	....	....	....	....	....	2189	253	....	....	....	....	....	....	....	....
Macan	390	....	201	....	....	....	....	....	....	130	30	....	....	....	....	....	....	....	....
New York & Acadia	78	....	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
C. H. Black..
McFarlane ..	Pictou ..	2248	522	1844	529	....	....	....	....	....	13161	1383	660	626	4040	185	2690	....	....	....
Acadia	22566	4358	711	277	....	....	....	....	....	20096	3013	2546	863	312	1080	28308	....	....	....
Albion....	..	2501	1180	160½	414	....	....	....	....	....	10075	2250	130½	464	5534	1057	5194	....	....	....
Intercolonial	186	189	181½	205	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
McBean
Merigomish..	..	220	99	200	94	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Nova Scotia	71½	....	60	11½	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pictou	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
McKinnon ..	Antigonish ..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Acadia ..	Cape Breton ..	9924	400	85	....	....	....	....	....	....	23319	765	1075	....	....	....	27690	....	....	....
Black House	4275	1423	3	40	....	....	....	....	....	10757	3551	2	24	....	20	11170	157	....	....
Caledonia...	..	1365½	21½	33	16½	....	....	....	....	....	300	....	2	7	....	603	....	....	....	....
Clyde
Collins	5039	1070	....	....	....	....	....	....	....	8552	391	2392	356	746	4	4995	....	....	....
Glaco Bay	9765	366	194½	876	....	....	....	....	....	7775	2750	3213	1081	3215	205	955	1542	....	....
Gowrie	10	5	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Gardiner	40	....	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ingraham	5	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
International	4525	858	45½	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lingan
Matheson
South Head..	..	13897	4806	220½	614½	279	....	....	....	....	21515	3090	10091	21½	6564	48	621	186	....	....
Sydney	600	....	10	3	....	....	....	....	....	2377	793	981	48	279	90	....	....	....	....
Victoria....
Balmoral
Lorway
Chinnery Corner	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Black Rock ..	Victoria....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
New Campbellton
		83372	19222½	5804½	1929½	1135	....	520	....	....	132455	180694	22768½	37264	22855	2807	97131½	259	....	....

COLLIERY.		COUNTY.		QUARTER ENDED SEPTEMBER 30TH, 1869.						QUARTER ENDED DECEMBER 31ST, 1869.						TOTAL QUANTITIES SOLD.													
				Raised.		Sold for Home consumption.		Exported to Neighboring Colonies.		Exported to other Countries.		Raised.		Sold for Home consumption.						Exported to Neighboring Colonies.		Exported to other Countries.							
Round.	Slack.	Tons.	Slack.	Tons.	Round.	Slack.	Tons.	Slack.	Tons.	Round.	Slack.	Tons.	Slack.	Tons.	Round.	Slack.	Tons.	Slack.	Tons.	Round.	Slack.	Tons.	Slack.	Tons.	Round.	Slack.	Tons.	Slack.	Tons.
																</													

MINE.	Coal Raised.	Average Number of Persons Employed.					Number of Days Labor.			Average No. of days per ton.	Average No. of tons per person.	Average No. of days per ton.	Average quantity raised per day—Tons.	No. of Horses.			Number of Engines.			
		In Mine.		In Surface.		Total.	In Mine.	On Surface.	Total.					In Mine.	On Surface.	Total.				
		Men.	Boys	Men.	Boys															
Joggins.....	13391	20	5	9	2	36	5445	2303	7748	215	372	217	61	10	1	1	9			
Macan.....	670	4	1	1	7		517	152	669	95	95	103	6	1	1	1	20			
New York and Acadia.....	910	6	.....	7	1	14	235	1941	2176	155	65	39	23	2	1	1	12		
C. H. Black.....	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
A. McFarlane.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acadia.....	55314	92	15	54	2	163	22465	14835	37300	229	339	209	264	10	3	3	70			
Albion.....	101509	179	53	207	33	472	49179	64427	113606	239	215	212	478	54	20	23	1350			
McBain.....	378	6	.....	3	9		236	479	715	79	42	39	10	1	.....	.....	.....
Nova Scotia.....	319	6	.....	2	11		246	189	435	39	29	41	7	2	1	1	40		
Intercolonial.....	60956	91	21	81	3	196	24814	18285	43099	220	311	221	275	10	2	2	60			
Marsh.....	71½	12	.....	6	8	26	247	134	381	14	3	20	3	3	1	1	15		
Merionish.....	125	3	.....	1	4		309	122	431	108	31	103	1	1	.....	.....	.....
Acadia, C. B.....	53	8	1	14	23		60	231	291	13	2	6	9	1	.....	.....	.....
Block House.....	78626	135	39	83	14	271	35258	20648	55906	206	290	202	389	38	2	2	90			
Balmoral.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caledonia.....	32444	52	4	39	.....	95	11879	9318	21197	223	352	212	153	10	2	2	55		
Clyde.....	2674	10	1	17	1	29	1127	2492	3619	124	92	102	23	1	1	1	7			
Collins.....	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glace Bay.....	24755	52	11	40	5	108	6763	9469	16232	150	229	107	231	21	4	4	65			
Gowrie.....	51346	80	15	49	7	151	22660	12446	35106	232	340	238	215	23	1	1	25			
Gardner.....	215	3	.....	1	4		126	42	168	42	53	42	5	2	.....	.....	.....
Ingraham.....	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
International.....	3763½	19	3	30	1	53	2489	2691	5180	97	71	113	33	13	1	1	7			
Ligon.....	31943	80	21	38	9	148	17614	8596	26210	177	215	175	182	13	3	3	100			
Matheson.....	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Head.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sydney.....	107481	233	81	170	22	506	64616	50369	114985	227	212	205	524	84	2	9	11	855		
Victoria.....	9973	41	8	35	9	93	6780	8412	15192	163	107	138	72	4	3	3	40			
Antigonish.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chimney Corner.....	448	6	.....	25	.....	31	585	3690	4275	138	14	97	4	3	.....	.....	.....
Black Rock.....	186	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Campbellton.....	211	3	.....	4	.....	8	192	364	556	69	26	64	3	3	1	1	7		
Lorway.....	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	578062	1141	279	917	121	2458	273842	231635	505477	310	5	59	64	2857		

GOLD.

MINES DEPARTMENT for 12 Months ended December 31st, 1862.

RECEIPTS.					EXPENDITURE.							
DISTRICTS.			Rents.	Royalty.	Sites.	Totals.	Salaries, Surveys, &c.	Return of Rents.	Return of Royalty.	Royalty (con- mission.	Lands.	Totals.
Oldham .....	.....	.....	\$289 50	\$683 23	\$10 00	\$982 73	\$220 50	\$2 00	\$15 88	\$18 97	.....	\$257 35
Renfrew .....	.....	.....	875 75	1616 75	.....	2492 50	260 92	88 00	.....	82 77	.....	431 69
Waverley....	.....	.....	150 00	1443 17	.....	1593 17	378 84	24 00	127 43	151 69	.....	681 96
Tangier .....	.....	.....	578 00	570 82	.....	1148 82	.....	60 00	.....	16 38	\$500 00	576 38
Stormont (Isaac's Harbours)...	.....	.....	1135 63	115 92	.....	1251 55	622 76	.....	.....	12 95	.....	635 71
Wine Harbour...	.....	.....	1222 00	402 34	.....	1624 34	703 75	28 00	.....	21 01	.....	752 76
Sherbrooke..	.....	.....	1650 00	2993 66	.....	4643 66	759 62	12 00	.....	147 06	.....	918 68
Ovens .....	.....	.....	94 00	66	.....	95 66	22 75	.....	.....	.....	.....	22 75
Montagu .....	.....	.....	414 00	207 23	.....	621 23	27 36	4 00	.....	.....	.....	31 36
Wagamatkook ..	.....	.....	44 00	.....	.....	44 00	.....	.....	.....	.....	.....	.....
Uniacke.....	.....	.....	668 00	1071 34	.....	1739 34	386 55	50 00	.....	67 60	.....	504 15
Lawrencetown ..	.....	.....	252 00	9 05	.....	261 05	17 00	.....	.....	.....	.....	17 00
Musquodoboit—Unproclaimed	.....	.....	1549 09	214 63	.....	1754 63	822 67	54 00	9 67	.....	.....	886 36
Fifteen-Mile Stream	.....	.....	98 00	.....	.....	98 00	.....	.....	.....	.....	.....	.....
Prospecting Licences.	.....	.....	.....	.....	.....	7453 87	.....	.....	.....	.....	.....	.....
			9010 88	9329 80	10 00	25804 55	4222 72	322 00	153 00	518 43	500 00	5716 15

Supplementary Account of Expenses common to both Branches of the Department :—

Stationery and Printing,	..	..	\$2259 63
General Expenses,	..	..	6473 73
Expenses..Gold,	..	..	\$8733 36
“—Coal,	..	..	5716 15
			160 00
			\$14,609 51

OTHER THAN GOLD.

MINES DEPARTMENT for 12 Months ended December 31st, 1869.

COUNTIES.	RECEIPTS.				EXPENDITURE.			
	Licences to Search.	Licences to Work.	Royalty.	Totals.	Return Licences to Search.	Return Licences to Work.	Surveys.	Totals.
Antigonish	180 00	.....	.....	\$180 00	.....	.....	.....	.....
Cumberland	780 00	200 00	\$911 20	1891 20	\$20 00	.....	.....	20 00
Cape Breton	640 00	750 00	24315 24	25705 24	20 00	.....	.....	20 00
Pictou	500 00	50 00	13014 95	13564 95	40 00	.....	.....	40 00
Inverness	400 00	200 00	35 90	635 90	.....	.....	.....	.....
Annapolis	40 00	.....	.....	40 00	.....	.....	.....	.....
Colchester	140 00	.....	.....	140 00	.....	.....	.....	.....
Hants	40 00	.....	.....	40 00	20 00	.....	.....	20 00
Lunenburg	40 00	.....	.....	40 00	.....	.....	.....	.....
Kings	40 00	.....	.....	40 00	.....	.....	.....	.....
Richmond	140 00	.....	.....	140 00	20 00	.....	.....	20 00
Victoria	220 00	.....	99 70	319 70	20 00	.....	.....	20 00
Guysborough .. .. .	.....	.....	.....	.....	20 00	.....	.....	20 00
	3160 00	1200 00	38376 99	42736 99	160 00	.....	.....	160 00

STATEMENT

RECEIPTS AND EXPENDITURE FOR TWELVE MONTHS ENDED DECEMBER 31ST, 1869.

RECEIPTS.		EXPENDITURE.	
Rents (Gold).....	\$ 9010 88	Salaries and Surveys (Gold).....	\$ 4222 72
Royalty.....	9329 80	Return Rents.....	322 00
Mill Sites.....	10 00	Return Royalty.....	153 00
Prospecting Licenses.....	7453 87	Royalty Commission.....	518 43
Licenses to Search (Coal).....	3160 00	Lands.....	500 00
Licenses to work.....	1200 00	Return Licenses to Search.....	160 00
Royalty.....	38376 99	Stationery and Printing.....	2259 63
		General Expenses.....	6473 73
			\$ 14609 51

REPORT

OF THE

CHIEF COMMISSIONER OF MINES

FOR THE

PROVINCE OF NOVA SCOTIA,

FOR THE YEAR 1871.



HALIFAX, N. S.

PRINTED BY THE CITIZEN PUBLISHING COMPANY.

1872.

REPORT.

DEPARTMENT OF MINES,

Halifax, February 8, 1872.

SIR,—

I have the honor to submit, for the information of His Excellency the Lieutenant Governor, the customary Report respecting the Mines of this Province for the year ending December 31st, 1871.

It is gratifying to be enabled to state that there has been a satisfactory increase over that of last year in the products of the Collieries, in each of the Coal Mining centres. In Cumberland County there was an increase this year over the Coal mined last year of 3500 tons; in Pictou of 19,000 tons; and in Cape Breton of 15,000 tons: the total increase in the quantity of round Coal mined during the year being 38,000 tons. This increase, it is significant to notice, was obtained during an unusually short working season, which was brought to an end sooner than is customary, by the closing of navigation very suddenly and early, and the setting in of severe weather in November last. The increase above reported would, of course, have been much greater had the season been of the ordinary and average character.

The Gold mines have been worked steadily, and in many cases profitably. The returns, indeed, shew a small decrease in the yearly standard of production; but they are quite as good as could be expected, taking into consideration the scarcity of men and the consequent high price of labour. There has, perhaps, been no year since the commencement of Gold mining in this Province during which the business has been of a more legitimate character than it was in 1871; there has been no unhealthy speculations, and the losses

generally have been small, whilst in some cases the profits have been large. I still have to regret the absence of improvement in the appliances for amalgamating and saving Gold. It is also a matter of regret that there are a number of mines, which have been proved capable of being worked at a profit, have been allowed from one cause or another to remain idle. In one or two instances efforts are in progress to remedy this inaction, but to what extent it would now be premature to judge. In the following special references to Gold-mining Districts, it seems advisable to state the names of the Mines or those of the owners of the more prominent areas, with the amounts produced.

STORMONT.

In this District there have been three mines worked. These are of "The United Mining Association (Limited)," that of "The Associated Mining Company (Limited)," and the Johnston's Brook Mine. The United Mining Association Mine has been worked continuously through the year; but hitherto not so successfully as was anticipated, owing to the defective manner in which it was first opened. A very large excavation was made at the surface, and the sides thereof being insufficiently secured, caved in, by which the surface drains were destroyed and the mine flooded. A tunnel has now been made to carry off the surface water as it collects, and the Mine is again in working condition. The area is easily mined, the quartz is improving in quality, exists in large quantities, and may now be expected to be remunerative. The quantity crushed by the Association amounted to 1483 tons yielding 282 oz. of Gold.

On the Consolidated Mining Company's Mine, work began in May last. This mine is on a continuation of the same band of lodes worked by the United Mining Association, and has so far proved remunerative, with good prospects for the continuance of prosperous results. The quartz of both these mines is crushed at the mill owned by the United Mining Association, which is driven by water

power, and is about half a mile from the mines of both Companies.

There were crushed from the Consolidated Company's Mines 306 tons of quartz, yielding 239 oz. of Gold.

The Mine at Johnston's Brook was worked until the month of May. There being a number of owners and a large expenditure becoming necessary for a Crusher and other acquirements, it was thought desirable to have a better organization of the Company before such further expenditure should be made. This it is proposed to accomplish by an Act of Incorporation, for which application will be made to the Legislature, without delay. The prospects of this Mine are considered to be very good, 140 tons of quartz from it yielded when crushed 37 oz., of Gold. The whole yield from the Stormont District was 560 oz., of Gold from 1937 tons of quartz, the result of the labour of 18 men ; which is equal to \$575 for each.

WINE HARBOR.

In this District mining operations were more extended last season.

The "Eldorado" Company was the most successful, making fair and profitable returns each month. The quartz crushed amounted to 1786 tons, yielding 1267 oz. of Gold.

The Phoenix Company returned in the months of August, October, and November, 140 tons of quartz crushed, yielding 151 oz., of Gold.

The Provincial returns since September were 684 tons of quartz, crushed, yielding 61 oz. of Gold ; and the "Gladstone" Company in the months of May, and June crushed 168 tons of quartz, yielding 46 oz., of Gold. These with a few others make the whole return for the Wine Harbor District 2927 tons of quartz, crushed, yielding 1538 oz. of Gold, the result of the labour of 36 men, being for each equal to \$790.

SHERBROOKE,

In this District there have been 5 Mines kept constantly at work during the year; viz., the Wellington, the Sherbrooke, Dominion, Palmerston, and a small mine wrought by Messrs, McClure and Snow,

In the "Meridian" and "Wentworth" Mines and James H. McDonald's Mine, work was commenced in April. In John McDaniel's and Newell Snow's areas work began in July, and all of them were in full operation at the end of the year. There has also been considerable prospecting and mining in a desultory way done during the summer. In the months of August, and September, the Deputy Commissioner's returns show 18 mines at work.

The principal amount of the work has been done, and the largest part of the Gold obtained by the Wellington, Sherbrook, Dominion, Palmerston, Caledonia, and Wentworth Companies, the returns show the following result:

The "Wellington" raised and crushed 2095 tons of quartz yielding 1385 ozs. of Gold. The "Sherbrooke," 1698 tons, yielding 1696 ozs. The "Dominion," 2580 tons yielding 637 ozs. The "Palmerston," 4048 tons, yielding 805 ozs. The "Caledonia," 367 tons, yielding 502 ozs., and the "Wentworth," 2542 tons, yielding 736 ozs. There are some other mines wherein the amounts obtained, though small, do not show unfavorably. The "Cleverdon" crushed 38 tons of quartz, yielding 99 ozs. of Gold. The "Meridian" Company, 85 tons yielding 132 ozs., James H. McDonald's Mine, 67 tons, yielding 136 ozs. The Mine wrought by McClure & Snow, 25 tons, yielding 129 ozs. Snow's Mine, 42 tons, yielding 35 ozs. John McDaniel's Mine, 50 tons, yielding 28 ozs. The returns from the whole district show that 14,382 tons of quartz were crushed yielding 6570 ozs. of Gold, the result of the labour of 171 men; which is equal to \$711 to each.

TANGIER.

Tangier, one of the oldest of our Gold mining fields produced more Gold in this, than any previous year. The "Strawberry Hill," "Humber," "Forrest," and "Froud" Mines have been wrought continuously throughout the year, and the "Burlington" also, except in the June quarter. The Strawberry Hill produced more than half the amount raised in the district, viz., 1212 tons of quartz, yielding 1154 ozs. 09 dwts. of Gold, the "Humber" produced 789 tons, yielding 416 oz. 10 dwts., the "Burlington" 388 tons, yielding 180 oz., the "Forrest" 198 tons, yielding 164 oz. 15 dwts., and the "Froud" 220 tons, yielding 109 oz. of Gold. Some Gold was obtained also from other small lots, making the total returns for the year, from Tangier, 2924 tons of quartz crushed, yielding 2093 oz. of Gold, by 88 men, and showing an average of \$440 to each.

MONTAGU.

In this District, two Companies, those of Messrs. W & E Lawson, and Taylor & Company, have been at work continuously throughout the year, and in June another Mine was opened by Brown & Barker, on tribute; it is owned by the "Montreal Exploration Company" and work still proceeds in it. The amounts obtained by each enterprise are as follows: Lawson & Co, 468 tons of quartz, yielding 2272 oz 17 dwt 10 grs of gold; Taylor & Co, 309 tons, yielding 724 oz. 13 dwt 10 grs., Brown & Baker, 67 tons, yielding 154 oz. 07 dwts. 21 grs. These with the proceeds of some other small lots make a total of 848 tons of quartz, yielding 3152 oz. 08 dwts. 15 grs. of Gold, obtained by labor of 51 men, giving an average to each of \$1143.52.

This District has always been characterized as giving the largest average yield per ton of any of the Gold fields. The lodes worked are small but a great number of larger lodes can be traced showing Gold which will no doubt be ultimately worked at a profit.

WAVERLY.

In this District two mines have been steadily worked during the past year; one by the "Lake Major" Company, and the other by the "American Hill" Company. The "Burkner" mine has been worked a part of the year.

The Lake Major Company crushed 1485 tons of quartz, giving 993 oz. of Gold; the "American Hill" 997 tons, giving 363 oz. 16 dwts. of Gold; and the "Burkner" mine 260 tons, yielding 71 oz. of Gold, in all 2742 tons quartz, yielding 1427 oz. 8 dwts. 12 grs. of Gold, raised by 56 men; showing an average to each of \$471.72.

OLDHAM.

The mining operations in this District during the year were rather of a fluctuating character, over 25 different parties were at work. The principal part of the mining was done by the "St. Andrew's Company," which crushed 381 tons of quartz, giving 649 oz. of Gold; the Sterling Company 384 tons, yielding 454 oz.; Doyle & Horne 35 tons, yielding 224 oz.; and R. G. Fraser 110 tons, yielding 153 oz. The others obtained varying quantities from a few grains up to 47 oz. of Gold, the whole results for the year were 1374 tons of quartz crushed, yielding 1718 oz. 12 dwts. 12 grs. of Gold, mined by 43 men, giving thus to each an average of \$739.41.

RENFREW.

Renfrew District continued in almost the same condition as in the previous year. The "Ophir" Company's returns show 1436 tons of quartz crushed, yielding 625 oz. of Gold; the "Hartford" 494 tons, yielding 383 oz. The "New Haven" and "Renfrew" mines yielded smaller amounts. Only the foregoing Companies were at work, and the full returns from all were 900 tons of quartz crushed, yielding 360 ounces of Gold; there being on the average 36 men employed.

UNIACKE:

Little has been done in this District during the past year. Several fresh mining attempts were made, but apparently without vigor; although in some cases appearances seemed to warrant success. The results of the year's labour were 900 tons of quartz crushed, yielding 360 oz. 17 dwts. of Gold, obtained by 14 men; which gives an average of \$476.83 to each.

CARIBOU.

In this District Mr. Touquoy's mine is the only one that has been continuously worked during the year; he has crushed 384 tons of quartz, yielding 405 oz. of Gold. Mr. Josiah Jennings crushed 39 tons, giving 68 oz., and Mr. Robert Taylor 36 tons, giving 26 oz. 15 grs.; which were all the attempts at mining of any importance. Preparations are now in progress to work the Bushing mines.

The yield for the year is 479 tons of quartz, giving 304 oz. 16 grs. of gold, being an average for the 10 men employed of \$933.88.

UNPROCLAIMED AND OTHER DISTRICTS.

The proceedings for the year have not been of much importance. At Gay's River there is a crushing mill now a building, and another at Beaver Dam was licensed during the summer. The Yarmouth mill has done but little. The remaining mills throughout the Province have been idle. The whole results are 281 tons of quartz crushed, yielding 112 oz. of Gold.

The usual statistical information collected from the official mining returns will be found appended in the form of tables arranged as clearly and as concisely as possible, for the purposes of comparison and general reference.

The Report of the Inspector of Mines is also subjoined, and possesses information on the general condition of our mining industries of great importance and interest. It is

but proper to remark here that the recent resignation of the Inspectorship of Mines by Mr. Rutherford, who enters on a new career in connection with one of our foremost Coal-mining Companies, has deprived the Department of a highly efficient, active and valuable officer. Arrangements are under consideration by the Department for such a re-adjustment of the duties of the office of Inspector of Mines as will economize public expenditure and bring the work of inspection up to the very latest requirements of mining enterprise.

In reference with the mining capabilities of Nova Scotia, it is worthy of remark that an admirable representation of these in all their great variety and comparative economic value exists in the noble geological and mineralogical collections in the Provincial Museum. While the other-resources of the Province are represented, and the usual varying departments appropriate to a museum are to be found therein, the geological department is pre-eminently the most valuable feature of the whole. It has been enriched by one of the best collections ever made in the Province; additions are constantly made, and all have been arranged with such scientific care as to afford a most complete view of the geological aspects of the Province, especially in reference to the products of its mines. Dr. Honeyman's Report will give a more detailed description of the value of the Provincial Museum.

I cannot close this Report without urging the necessity there exists for the establishment of a School of Mines for the Province. To her mineral riches mainly Nova Scotia must look more and more every year for the sources of progress and prosperity. But unscientific mining must in Nova Scotia be always comparatively unproductive. The Gold fields of this country show no alluvial lotteries where luck may dispense with skill. The gold-bearing quartz of the country forms a remunerative investment for capital, which is scientifically applied and intelligently managed, but mere ignorant labour has hitherto proved for the most part fruitless labour. To attract foreign capital to our mines, and

afterwards to extend manufactures, give greater safeguards to our own native capital flowing in the same direction, and to find lucrative employment for a growing mining population, are those requirements of our present position which can be best satisfied by a more general diffusion of accurate information regarding our mineral resources and the right modes of reaching and working them. For this purpose a School of Mines, wherein practical and economic geology could be studied, where the Mineralogy of the Province could be properly defined, and where the best technical mining education could be imparted, would be of the highest value to our population, and would lead far more rapidly to the proper development of the mining resources of the whole country. I trust, therefore, that the earliest available opportunity will be taken to commence the establishment and equipment of a Provincial School of Mines.

WILLIAM GARVIE.

HON. W. B. VAIL,

PROVINCIAL SECRETARY.

INSPECTORS' REPORT.

DEPARTMENT OF MINES,

Halifax, January 26th, 1872.

SIR,—

In submitting the following Report on the mining operations in the Province during the past year, I have pleasure in again noting an increase in the sale of coal. The aggregate sales exceed those of last year 28,142 tons, the increase in the sale of round coal being 38,189 tons. The operations notwithstanding, have been of that diversified character which has prevailed for the last two or three years. Fluctuation in the production of the mines is again a noticeable feature; in some it exceeds and in others it is below that of last year. Whilst too, some have remained unworked, some have been more fully developed; and new mines are being rapidly brought into operation. The workings at most of the mines have been so slightly extended that beyond a notice of the locality of the mine in which they have been carried on, they present little for special remark. The regularity with which in most cases they are now conducted in the coal mines, owing to the few difficulties met with is a gratifying circumstance, which would, however, be still more so if the operations were on a par with the capabilities of the mines. In

CUMBERLAND COUNTY

the principal part of the mining has as hitherto been at the

JOGGINS,

in which mine the workings have been carried on in the usual manner, and in the same locality of the mine as last year, there having been no further extension of the levels in an easterly direction.

The operations to which I alluded last year have however been put into execution. A new slope has been driven to the dip near the hoisting shaft. It is now 520 feet in length, and working places are being won out. A steam engine has been erected on the surface to draw the coal up this slope and railway connections are being made to enable the operations at the mine to be concentrated at the new works. On completion this mine will be in a much improved position in all respects.

The returns show an expenditure as follows :

Adits and levels.....	\$4900.00
Surface work.....	910.00
Machinery.....	1600.00
<hr/>	
Total.....	\$7410.00

MACCAN.

At this mine no change has occurred in the character of the operations; they are still confined to the portion of the mine in which they have been carried on during the last two years; and the production being exclusively for land sale purposes it is limited in quantity. An expenditure is returned on—

Adits and levels	\$50.00.
------------------------	----------

NEW YORK AND ACADIA.

Mining at this colliery has also been on the same small scale as last year; the workings have therefore been very little extended, and present no change worth noting. The expenditure is stated to be, on—

Adits and levels	\$413.25
Machinery.....	600.00
<hr/>	
Total	\$1013.25

SPRING HILL..

In this locality, whilst considerable industry has been exhibited in the extent of the explorations carried on

there has been little actual mining. On the Black and Macfarlane area the operations have been chiefly of an exploratory character, those of last year having rendered it desirable to continue them along the range of the crops of the seams.

A few tons of Coal have been taken out for land sale at a shaft near the crop; no opening of a permanent character has, however, yet been made, the selection of a suitable place having been delayed till the result of the exploration was ascertained.

The following is the expenditure as per returns on the Black area:

Prospecting and Boring.....	\$473 00
And on the Macfarlane areas:	
Shafts	\$550 00
Prospecting and Boring.....	586 00
	<hr/>
Total.....	\$1136 00

A series of boring has been carried on by Mr. Livesey in this locality and also in the neighbourhood of Stuart Road, with a view to determine the position of the seams. As these operations are not yet completed little additional knowledge in this respect has been obtained.

PICTOU COUNTY.

In this County the principal mines have been kept steadily in operation, though not in each case to the same extent as last year. At the

ALBION MINES.

the operations have been in both of the seams usually worked. In the Foord pit the main levels have been much extended and the number of working places correspondingly increased. In one of the drifts, which were being driven towards the old workings to the rise, a connection was recently made with them by boreholes and their position having been thus ascertained, the apprehensions which prevailed respecting the body of water in them have been very much allayed. The water is in course

of being run off by the borehole and the workings will, it is expected in a few months, be entirely drained. A Ventilating Fan is about to be erected and other measures are being adopted to place this pit in a most efficient condition in all respects.

In the deep seam, the operations in which have been chiefly in the West District of the mine, arrangements have been completed for a more extensive working to the dip, in the neighborhood of the shaft. A crosscut or shaft has been driven to the dip, and a Steam Engine for hauling the Coal up it has been erected near the bottom of the slope. The Foster pit workings have continued shut off during the year, but there has been nothing to cause fear respecting the fire which rendered it necessary to close the mine. The indications are favorable to the supposition that it is now quite extinguished.

The manufacture of Coke on the open burning principle has for some time been practised at this Colliery. During the past year, however, Coke ovens have been erected and the production of this article is being conducted in the manner practised in England, with an improvement in its quality.

ACADIA.

The operations at this colliery have been carried on with great regularity, and the production again exceeds that of last year. The lower levels, won out last year have been considerably extended on each side of the main slope; the operations having been carried on simultaneously in that district of the mine and in the upper levels. Preparations are now being made for driving to the dip for the purpose of opening out another set of levels in connection with the slopes, and thus maintaining the productive capacity of the mine. The expenditure is stated to be as follows:

Surface work.....	\$ 360.73
Machinery.....	1320.58
Total.	<u>\$1681.31</u>

INTERCOLONIAL.

Although the sales from this mine are not to the extent of last year, the operations have been carried on with steadiness as regards the underground workings. These have been conducted in the usual manner, and have been much extended on each side of the main slope. An additional winning to the dip is about to be made and other steps are being taken to maintain the mine in an efficient condition. An expenditure is returned as follows :

Shafts.....	\$ 429.18
Adits and levels.....	1314.89
Surface work.....	2163 29
Machinery.....	1362.57
Houses.....	2250.17
<hr/>	
Total.....	\$7520.10

NOVA SCOTIA.

This mine has during the year been brought into effective operation by the completion of the railway connecting it with the shipping wharf at Middle River. The workings are being carried on in a systematic manner on each side of the slope, and the mine being now opened on a scale commensurate with the general character of the operations, an increased production may be expected. The returns show an expenditure on,—

Adits and levels.....	\$ 6350.50
Surface work... .	13761.25
Machinery.....	350.00
Houses.....	2636.28
<hr/>	
Total.....	\$23698.03

Little has been done on the other mining properties in this county towards an extension of the operations hitherto carried on. On the McBean areas they have been, as last year, confined to the working of a few tons of coal for

land sale—Messrs. Barton and Mitchell have very recently reached the seam towards which an adit was in course of driving last year, and it is now being opened out. An expenditure is returned as follows:

Shafts.....	\$ 80.00
Adits and levels.....	1195.75
Surface work.....	100.75
Prospecting and boring.....	66.00
Total.....	<u>\$1442.50</u>

The Crown Brick and Pottery Company of New Glasgow have continued their operations on the Richardson seam; the slope being now 159 feet in length. At a depth of 134 feet levels have been driven on each side and a few working places won out. A small steam engine has also been erected to haul the coal up the slope. The expenditure has been as follows:

Slope.....	\$ 750.00
Adits and levels.....	500.00
Surface work.....	100.00
Machinery.....	2000.00
Houses.....	900.00
Total.....	<u>\$4250.00</u>

On the Merigomish and Pictou Mining Company's properties, explorations have been made with a view to ascertain the position of the seams, but no regular mining has been carried on.

CAPE BRETON.

In the Counties of Inverness and Victoria the only mines opened are still the Chimney Corner and the New Campbellton. At

CHIMNEY CORNER,

although the sales have not been large, the operations have been steadily carried on. The main slope is now about 400

feet to the dip, and the levels, which are driven in a south-east direction, vary from 300 to 600 feet in length. An additional boiler has been supplied to the hoisting engine, and other arrangements made for an increased production.

he returns give an expenditure on,—

Shafts.....	\$ 185.00
Adits and levels.....	250.00
Surface work.....	1080.00
Machinery.....	3500.00
Houses.....	400.00
<hr/>	
Total.....	\$5415.00

At the New Campbellton Colliery no Coal has been raised during the year. The Black Rock, Matheson, and Collins Mines have also been unworked, with the exception of a few tons raised at the last named.

SYDNEY MINES.

The usual steadiness in the operations has prevailed at this Colliery; the production being maintained at a very uniform rate. The operations have been of the ordinary character and present nothing requiring special remark. The sinking of the new shaft near Cranberry Head has recently been resumed and arrangements made for a steady prosecution of this important addition to the productive powers of the Colliery. The returns show an expenditure as follows :

Shafts.....	\$3505.58
Surface work.....	1201.08
Machinery.....	709.85
Houses.....	660.00
<hr/>	
Total.....	\$6076.51

VICTORIA.

Operations at this mine have also been carried on with regularity and the workings are now considerably ex-

tended. The general arrangements, too, are more complete and adapted to an increase in the yield of the mine. The expenditure is stated to be on

Shafts and Slopes.....	\$ 5000.00
Adits and levels.....	15012.00
Surface work.....	8000.00
Machinery.....	1800.00
Houses.....	2500.00
Railway and wharf.....	1429.00
Total.....	<u>\$33741.00</u>

LINGAN.

At this Colliery the operations have been conducted in the usual manner, and in the same Districts of the mine as hitherto. The extension of the main slope to the dip and the opening of the seam at its extremity by levels on each side has placed this mine in a position to meet an increased demand for Coal. At the Barrasois operations have again been resumed and the slopes are being driven to the dip. The expenditure is returned as follows :

Adits and levels.....	\$5454.48
Surface work.....	194.85
	<u>\$5649.33</u>

INTERNATIONAL.

The produce at this Colliery has, during the year, been largely increased, the operations having been carried on with much vigor. The workings have been much extended, an enlarged scale of pillarage has been adopted, and the mine generally is arranged for a steady and large production. During the year a manager's and an additional workman's house has been erected. The returns show expenditure on

Shafts.....	\$ 12.00
Adits and levels.....	3712.56
Surface work.....	850.00
Houses.....	200.00
Total.....	<u>\$4774.56</u>

CALEDONIA.

The operations at this mine are still on a small scale in comparison with its capabilities of production. They offer little for remark; mining being pursued in the manner practised since the commencement of the Colliery. The removal of some of the pillars has been continued with success and the workings generally are carried on with regularity and system. The expenditure is stated to be on

Shaft, &c.....	\$351.00
Houses.....	427.00
Total.....	<u>\$778.00</u>

LITTLE GLACE BAY.

This mine also, is, in its yield of Coal, much beneath its means of production. The Hub seam only has been worked; the extension of the workings being chiefly in the district of the mine worked last year; no extension of the levels having been made or further openings of the seam. The returns show an expenditure on

Shafts.....	\$234.48
Adits and levels.....	334.61
Slip and wharf.....	650.80
	<u>\$1219.89</u>

CLYDE.

Nothing has been done towards the opening of this mine on a larger scale. The extent of the operations is very similar to last year, and the workings are in consequence but slightly extended. An expenditure is returned as follows:

Adits and levels.....	\$600.00
-----------------------	----------

BLOCK HOUSE.

Operations were suspended at this colliery early in the year, and have not since been resumed. The mine has

however been kept in working order, and mining will, it is expected, be commenced at an early date.

GOWRIE.

At this colliery the usual steadiness of the operations has prevailed; the sale of coal however exhibits a deficiency in comparison with last year. In the mine the levels and other working places have been kept regularly going and the position of the mine generally is unaltered with respect to its productive capacity. Another shaft is being sunk near the western boundary of the area, with a view to shorten the lead of coal underground and increase the yield of the mine. In the returns the expenditure is given as follows:

Shafts.....	\$ 210.00
Adits and levels.....	200.00
Surface work.....	202.00
Machinery.....	356.00
Houses.....	230.00
Prospecting and boring.....	120.00
Breakwater.....	3150.00
<hr/>	
Total.....	\$4468.00

SOUTH HEAD.

Nothing has been done at this mine of any moment during the year. An expenditure is returned on,—

Surface work.....	\$654.29
-------------------	----------

GARDENER.

The operations at the Gardener colliery, which consists of the sinking of a shaft, were suspended early in the year; it being considered desirable to effect a winning at a point farther to the dip than was at first projected. No steps have, however, been taken towards this object. The returns show an expenditure as follows:

Shafts.....	\$175.00
Machinery.....	120.00
Houses.....	75.00
<hr/>	
Total.....	\$370.00

At the other localities in the County of Cape Breton, in which preparatory mining operations were in hand last year, no further progress has been made. A considerable development of mining property has, however, taken place on the route of the Glasgow and Cape Breton Railway, the construction of which was commenced in the early part of the year. This line of railway passes through a district which has hitherto had no means of access to the seaboard, and the seams of Coal which it contains have therefore remained unopened. The vigor with which the line has been pursued will be appreciated from the fact that ten miles of road have been made since Feb. 7, last. The track is of narrow gauge being only 3 feet in width. At the distance named it is connected with the Reserve area, on which mining operations have also been conducted with highly creditable energy. The seam of Coal opened is the Phelan, and is the same as that worked at the Caledonia Colliery. A pair of slopes have been driven to the dip in a diverging direction. One of these, the North one, is now 700 feet in length, and the other is 350 feet down. Levels have been turned and working places won out; and the interior arrangements of the mine are being rapidly prepared for extensive operations. On the surface the usual erection for screening the Coal has been completed. An Engine-house, in which a 60 Horse-power Engine is about to be placed, has been built; twelve blocks of two houses each, stable and barn, Smith's and Carpenter's shops, Foreman's and Manager's houses, Powder Magazine, &c., have been erected and the usual equipments of a mining establishment are being provided. The returns show an expenditure as follows:

Adits and levels.....	\$13085 26
Surface work.....	2279 23
Machinery.....	1673 48
Houses.....	23976 14

Total..... \$41014 11

On the Lorway areas, which are situated a short distance to the South West of the Reserve, operations have also been begun and are being pushed forward with much energy. The seam opened underlies the Phelan and has not yet been mined in any locality. Its thickness is 4ft. 1in. Two shafts, 14ft. and 10ft. in diameter, are being sunk, the situation of which is about 1000 yards from the crop of the seam and in the direction of the dip. These shafts are intended for the general requirements of the mine, viz., hoisting, pumping, and ventilation, and will, when completed, enable a large extent of Coal to be opened. An opening is also being made by slope from the crop by which it is intended to win out working plans and carry on regular operations until the completion of the shaft, &c. This mine is very advantageously situated as regards the Glasgow and Cape Breton Railway, with which it is intended to connect it by a short branch. In connection with these operations, eight double houses, a manager's house, stable, and Smith's shop have been erected. The expenditure is stated to be as follows :

Shafts, Adits and levels.....	\$ 5964.69
Surface work.....	3472.51
Machinery.....	1480.00
Houses.....	11500.00
	<hr/>
Total.....	\$22417.20

In one other locality in this County, preparations are being made by Messrs P. Ross & Co., for commencing operations in the sea areas held by them near Cranberry Head, and which are situated about half a mile from the shore. An expenditure is returned of \$1004.61.

GOLD MINES.

The operations in the Gold mines have, during the year, been conducted in the usual localities with more or less vigor according as circumstances have dictated. In some the production have remained very steady and in others it has been reduced. At the

OVENS,

and other localities generally associated with that district, no mining of any moment has been carried on. Prospecting in a few places has, however, been continued.

RENFREW.

Mining in this district has been but to a small extent in comparison with former years. The principal operations have been carried on by the Ophir and the Hartford Companies on the lodes worked last year. They have been conducted in the usual manner and present no new or noticeable features.

OLDHAM.

The principal mining in this locality has been on the Symonds lode by the St. Andrew's Company. The operations were, for the greater part of the year, steadily carried on, but they have recently been suspended and the mine is now abandoned. The Barrel lode has also been worked, and Mr. Donaldson has continued to mine the lode opened by him last year. Operations have recently been begun by Mr. Shaffer, on the lode formerly worked by the Britannia Company.

WAVERLY.

The operations in this district, though still circumscribed in comparison with former years, have been continued by Messrs. DeWolf and others. The Union lode has until

within the last three months been regularly mined by DeWolf & Co., in the usual manner. At present operations are suspended and mining has been resumed on the Brodie lode north of the Tudor. The American Hill Company's operations have been confined to the North Taylor lode.

MONTAGU.

The only mining of any moment in this district has been, as was the case last year, by the Messrs. Lawson and the Montagu Company. By the former it has been steadily pursued and carried on with much regularity. The main shaft on the Belt lode is now 240 feet deep, the east one 124 feet, and the west one 190 feet. The extent of ground stoped underhand between these shafts is 422 feet. Explorations have also been continued during the year; about 400 feet of ground to the south of the Belt lode having been cut and tunneled through. In connection with the work a ten stamp crusher is in course of erection.

The Montagu Company's operations have been chiefly on the St. Patrick lode, those on the Belt lode have been entirely suspended.

TANGIER.

Some unsteadiness has prevailed in this locality, the operations of the Burlington Company having been suspended at the commencement of the year, and only resumed a few months ago. The mining has been on the stopes formerly worked. The Leary and South Lake lodes have also been connected by a cross tunnel. Some explorations have been made by the same Company on the North lode.

By the Strawberry Hill Company operations have been carried on with regularity on the Forrest and Dunbrack lodes, as hitherto. The works have been generally extended and are in the usual form; presenting nothing requiring special remark.

At Mooseland the Humber Company have continued their

operations on the Irving lode; the eastern extremity of the property having been chiefly worked. The depth of the shafts is now 60 feet. A tunnel has also been driven eastward 125 feet from which underhand stoping is regularly carried on. A shaft has also been sunk 15 feet on the western portion of the belt, and a tunnel driven 20 feet.

SHERBROOKE.

The mines in this district have been worked with more or less regularity during the year, according as the operations have been attended with satisfactory results or otherwise. On the Cumminger and Dewar lodes, mining has been steadily pursued by the Wellington Company. The main shaft on the Cumminger lode is now 480 feet deep. At this depth a tunnel has been driven 200 feet to the west and the lode stoped to the old workings. On the Dewar lode the main shaft has been sunk 70 feet farther; its depth being now 170 feet, to which depth the lode has been stoped over a length of about 200 feet.

The operations of the New York and Sherbrook Company have been on the McDaniel, the North, the Harrison, and the Sutherland lodes. On the first of these, after exploring eastward by tunnel and continuing the shafts without finding an improvement in the lode, operations have been entirely suspended. On the North lode, the depth of the main shaft is now 200 feet, and the operations, which are of the ordinary character, are steadily carried on. The shaft on the Harrison lode has been sunk to a depth of 210 feet, and the west tunnel, out of west shaft, is now 120 feet in length. On both these last named lodes the hoisting and pumping is done by steam power. Mining was continued a short time on the Sutherland lode, the shaft having been sunk to a depth of 120 feet. At present, however, all work is suspended.

By the Palmerston Company mining has been carried on with their usual energy on the lodes worked last year. On

the Palmerston lode the west shaft is now 120 feet deep ; to which depth the stoping has been carried underhand through to the west shaft. Eastward from the east shaft 100 feet, the lode has been stoped 30 feet to the end of the tunnel. Thirty feet from the east shaft and on the east side thereof, a tunnel has been driven to the south 26 feet, which cut a belt of lodes. On this belt tunnels have been driven east and west 25 feet, and the lode has been stoped overhead to the height of 15 feet, that length, on each side of the tunnel.

In the west shaft on the same lode a tunnel has been driven west at the depth of 90 feet, for which length the lode has been stoped to a height of 35 feet.

On the eastern portion of their property the Company have sunk a shaft 80 feet on the Stryker lode, and driven tunnels east and west ; the east one being 16 feet in length and the west one 30 feet, to which length and to a height of 50 feet the lode has been stoped. North of the Stryker lode 100 feet, two shafts have also been begun on the Snow lode.

The Dominion Company have also continued their operations on the Palmerston lode ; the depth of the main shaft being now 140 feet. The stoping has been carried on in the usual manner. Operations are however at present suspended.

The operations of the Caledonia Company on the Ferguson lode have been discontinued, and mining is now carried on by that company on the Caledonia or Wilson lode, about 30 feet north of the Ferguson lode. On this lode a shaft has been sunk 50 feet, and a tunnel driven in a slanting direction to the surface, the length of which is 200 feet.

Mining has recently been resumed by the Meridian Company on the Stryker lode, in which their former operations were carried on.

Two shafts have been sunk, the distance between them being 83 feet. The west shaft is now 120 feet deep, from

which depth a tunnel has been driven westward 73 feet. The depth of the east shaft is 115 feet. At 50 feet in this shaft a tunnel was driven to the west shaft and the lode has been stoped to surface above the tunnel. A shaft has also been sunk about 56 feet to the north of the Stryker lode and a cross-cut driven to connect it therewith.

The Hamilton Company have continued their operations on the Ferguson lode. A tunnel has been driven from the west shaft 40 feet to the east, and the lode is now being stoped overhead. From the east shaft the tunnel has been extended eastward 55 feet, being now 115 feet in length, for which distance the lode has been stoped underhand to a depth of 40 feet. On west side of same shaft the lode is stoped to the same depth and 60 feet in length. An opening has been made by this company on the Caledonia or Wilson lode, an open cut having been made 160 feet in length and 32 feet deep.

The cross-cut that was being driven from the west shaft on the Ferguson lode has been continued and is now 120 feet to the north of that shaft. Prospecting on other lodes has been carried on during the year by various parties. On one lode, north the of Wellington, an opening has been made by Mr. James McDonald, 150 feet in length and 23 feet deep. The New York and Sherbrooke Company have begun to open a lode supposed to be the Dewar. This class of work is for the present, however, suspended.

At Cochran Hill the little that has been done has been of a prospecting character.

WINE HARBOUR.

In this district the principal operations have been by the Eldorado and Phoenix Companies. Mining has been confined by the former Company to the belt of lodes hitherto worked. A new shaft has been sunk, and steam hoisting and pumping machinery has been substituted for horse power. The Phoenix, late Eureka, Company's operations have been on the same lode that was worked by that Com-

pany. An additional shaft has been sunk on it to the depth of the old workings ; and at a distance of 100 feet to the eastward, another has recently been begun.

STORMONT.

The only mining of any moment in this district has been by the United Mining Association of London and the Consolidated Mining Company, nothing having been done by the Mulgrave Company. The operations of both companies are on the belt of lodes worked last year by the former Company. About eight feet only on the north side of the belt is now worked by that Company. Two shafts have been sunk 20 feet, and tunnels are being driven between them. The Consolidated Company have also sunk two shafts 15 feet and begun tunnels from them.

At Country Harbour very little has been done during the year. In both localities prospecting has, however, been continued.

LAWRENCETOWN.

In this district mining has been nearly altogether suspended during the whole of the year.

MOUNT UNIACKE.

By none of the Companies in this district has mining been carried on to an extent exceeding the very limited operations of last year. The Uniacke, the Westlake, the Montreal, the Queen, and a few other properties, have been partially worked, but in each case, on but a small scale.

GAY'S RIVER.

The operations in this locality do not differ much from those of former years. Although still not worked to any extent, the results continue to be encouraging.

CARIBOU.

In this locality the operations have been prosecuted with steadiness and are being extended. Mr. Touquoy has opened two shafts on a lode, the thickness of which is ten inches. These shafts are 50 feet apart and 18 and 33 feet deep; the lode has been stoped between them. On the same lode an open cutting has been made to the west 100 feet in length and about ten feet deep. A similar extent of work has been done on the North lode, the thickness of which is 8 inches; and the South or flat lode has also been stoped by open cut 100 feet in length and over 20 feet in depth.

On the free claim Messrs. Jennings and Wilson have sunk two shafts 34 and 35 feet deep respectively, and 60 feet apart; and have stoped the lode between them to that depth. An open cutting has also been made to the west on the same lode 108 feet in length and 4 feet deep; and one to the east 30 feet in length and 8 feet deep.

The Taylor lode, 4 inches thick, has been opened in a similar manner, 225 feet in length and 8 feet deep. Operations on the Bushing areas were discontinued for about seven months, but the discovery of some good boulders in August last induced a search for a lode, which was, after much labor discovered. This lode, the thickness of which varies from 5 to 10 inches is nearly horizontal in position, being on the crown of an anticlinal. A considerable amount of work has been done in open cuttings for drainage and exploring; three shafts have been sunk 13 feet deep and the lode has been removed over a space 70 feet by 35 feet.

Another shaft has recently been begun in which pumping gear is to be placed in connection with the Engine that works the Mill.

On the Richey lode a shaft was sunk 20 feet, but operations are at present suspended on account of the quantity of water and other impediments. At the Hyde mine nothing has been done during the year.

Mining has been continued in other localities, but with

the exception of these at Yarmouth and Beaver Dam, the operations are still only of a prospecting character. At Yarmouth they have been carried on pretty steadily and in the usual manner on the lode worked last year. At Beaver Dam a shaft has been sunk on a belt of lodes, the thickness of the lodes varying from 2 feet to 3 inches. Another belt south of this containing 4 lodes averaging 12 inches in thickness has also been opened; and a 15 Stamp Mill and other buildings have been erected.

ACCIDENTS.

The accidents in the past year are twelve in number. Of these five have resulted fatally. Two persons have been hurt by machinery, four by falls of stone or coal, two by premature blasts, one by being run over by waggon, one by explosion of gas, one by falling from a bridge, and one was suffocated by gas. The following statement gives the names of the sufferers, the locality in which the accidents happened, and the result thereof:

No.	Date.	Name.	Name of Mine.	Cause.	Result.
	1871.				
1	Feb. 27 . . .	J. McDonald	Montagu	Hurt by machinery .	Recovered
2	March 3. . .	Geo. White, } . . .	Victoria	Fall of stone.	Died.
		Alex. Weir, }			Recovered
3	March 9 . . .	J. McKinnon	Sydney	Fall of coal.	Died
4	March 22 . .	A. McDonald . . .	Montagu	Hurt by machinery.	Recovered
5	April 18 . . .	K. McMullen	Sydney	Explosion of powder.	Died .
6	June 5. . .	Jno. Green	Sydney	Fall off bridge.	Died
7	July 18 . . .	— Steele	Sydney	Run over by waggon	Recovered
8	August 10 . .	J. Sutherland	Nova Scotia . .	Fall of coal.	Recovered
9	August 15 . .	A. McGilderic. . . .	Albion mines . .	Suffocated.	Died
10	August 21 . .	C. McKay	Caledonia	Explosion of gas. . . .	Recovered
11	August 24 . .	N. McDougall. . . .	Sydney	Fall of coal.	Recovered
12	Sep. 15 . . .	M. Borden	Caledonia	Explosion of powder .	Recovered

No. 1. This accident occurred to Joseph McDonald in a singular manner. He was lowering an empty tub at one of the shafts at the Albion mine, Montagu; and supposing that the tub had reached the bottom, he let go the jack roll, which, owing to the weight of the tub and rope, revolved so

rapidly that he was struck on the chest by it and rendered insensible for a while.

No. 2. George White, Alexander Weir, and other three men were employed in the Victoria mine, and were engaged in the bottom of the slope which was being driven to the dip. A large stone, which is supposed to have come from the dip of the slope, was suddenly loosened and the angle of the dip of the seam being very steep, it rolled with great rapidity down the slope. One of the men heard it coming and warned his companions, two of whom escaped with him by passing to the west side of the slope. White and Weir unfortunately kept to the east side, down which the stone was rolling, and both were struck by it. White was killed on the spot; Weir luckily escaped without serious injury. An examination of the slope was made, but how the stone became detached or where it came from was not discovered.

No. 3. The death of McKinnon was caused by a mass of Coal falling upon him when at work in the Queen Pit, Sydney mines. He had undermined the Coal and prepared it for bringing down by wedges which he had driven as far as he could into the Coal. It did not fall, however, and he left it to get his breakfast. On returning he incautiously began to extend the cutting made in the Coal without again trying the wedges, and whilst so employed, the mass fell upon him and inflicted injuries which caused his death.

No. 4. This accident was of a similar character to that which occurred at the same mine to Joseph McDonald on the 27th February. Angus McDonald was lowering Mr. Bell, the carpenter at the mine, down one of the shafts, when the handle of the jack roll, either by carelessness or owing to his inability to hold it, slipped from his grasp and in attempting to regain it he was struck on the arm, which was broken in two places. Mr. Bell, although he was precipitated about 40 feet, singularly escaped without injury.

No. 5. This accident occurred at the Sydney Mines,

and is a strong instance of the carelessness with which miners will occasionally go about their work. McMullen was one of three who were preparing to take down a mass of coal by blasting. They had commenced at a corner of a pillar of coal which was being removed in the ordinary manner; and he and another were engaged undermining, whilst the other man was preparing the hole for firing, on the other side of the corner. In doing this he struck the needle against a stone at the end of the hole, and ignited the powder and brought down the block of coal upon McMullen, who was crushed to death. His companion fortunately escaped.

It appeared, on examining the roof of the seam, that the hole had penetrated a short distance into the roof, and it is therefore strange that this was not discovered and more care taken in driving the needle. It was also very imprudent to undertake an operation requiring great care when the others were partially under the coal,

No. 6. Green was employed at the Sydney Mines Shipping Wharf. He was standing near the edge of a bridge to which some repairs were being made, when he fell backward into the road below, about ten feet, and was so injured that he did not recover.

No. 7. This accident also occurred at the Sydney Mines. Steel was one of the trimmers employed at the shipping wharf. Whilst lying on the wharf resting, he incautiously put his leg across one of the rails of the track. A loaded wagon was being pushed by two men towards a vessel, and one of the wheels passed over his leg.

No. 8. This accident occurred to Sutherland whilst loading the tubs in the Nova Scotia Mine. The coal is run down shoots into the tubs, and some of the pieces in falling struck him on the head and neck.

No. 9. McGilderic lost his life by going into an unworked place in the Foord pit, Albion Mines, in which there was gas. The place had been driven to the

rise for the purpose of ventilation, but was not holed, working having been suspended with the intention of holing it from the upperside.

It is not known what object McGilderic had in going into the place, as he had no necessity to go near it, but he appears to have been attempting to go to the face when he was struck down by the gas and suffocated.

No. 10. In this instance, McKay, who was a coal cutter in the Caledonia Colliery, was passing over a fall of stone, above which some gas had accumulated; and having a naked light he was severely burnt about the face and arms. The gas was known to be there, and he had been cautioned about it.

No. 11. This accident occurred at the Queen Pit, Sydney Mines. McDougal and his partner had fired a shot, which had not, however, brought the whole of the coal down, and whilst filling the loosened portion into a tub, a part of the mass that remained, fell upon McDougall and severely injured him.

I have the honor to be,

Your obedient servant,

JNO. RUTHERFORD,

Inspector of Mines.

THE HON'BLE W. GARVIE,

Commissioner of Public Works and Mines.

JANUARY, 1871.

DISTRICT.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	D.O. Steam Power.		D.O. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
							Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	2	10	3	1	2	2	140	...	...	40	...	...	...	02	09	...	02	09	...	...	...	4	16	04
Wine Harbor.....	2	30	5	4	1	1	167	...	...	147	...	...	1	01	09	...	101	09	...	...	...	157	03	...
Sherbrooke.....	14	178	11	9	2	2	1651	...	...	1651	...	...	...	08	17	...	205	04	...	...	...	718	08	12
Tangier.....	3	103	4	3	1	3	260	...	...	260	...	...	...	10	10	...	103	11	...	...	...	135	09	23
Montagu.....	1	35	2	2	...	...	51	...	...	51	...	...	4	06	16	...	406	16	...	...	...	221	...	...
Waverly.....	2	45	4	3	1	3	191	...	...	191	...	...	...	09	12	...	11	08	...	...	...	91	01	...
Oldham.....	10	35	3	1	2	2	9503	...	...	9503	...	...	1	07	18	...	208	10	...	...	...	134	02	01
Renfrew.....	8	42	5	2	3	3	203	...	...	203	...	...	...	15	...	...	117	20	...	...	...	152	01	...
Uniacke.....	4	9	6	5	1	3	83	...	...	115	...	...	...	04	12	...	07	07	...	...	...	25	18	16
Caribou.....	2	4	2	1	1	1	23	...	...	47	...	...	1	02	20	...	102	20	...	...	...	53	14	...
Unproclaimed & other Dist's.	.....	.....	9	5	4	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	48	491	54	36	18	2864	03	...	...	2800	03	...	...	12	02	...	406	16	...	...	...	1693	14	08

FEBRUARY.

Stormont	3	13	3	1	2	175	...	130	...	...	03 20	1 15 17	...	...	25 01 06
Wine Harbor	2	37	5	4	1	287	...	277	...	...	12 17	12 17	...	...	176 03 ...
Sherbrooke	13	176	11	9	2	1149	...	1149	...	...	09 20	2 03 04	...	...	564 04 18
Tangier	3	75	4	3	1	352	...	352	...	...	12 01	19 08	...	...	212 05 18
Montagu	2	68	2	2	...	77	...	117	...	...	2 11 22	18 00 12	...	...	303 17 ...
Waverly	2	44	4	3	1	177	...	177	...	...	09 18	10 21	...	...	86 09 ...
Oldham	8	39	3	1	2	128 09	...	128 09	...	...	1 12 05	2 00 01	...	...	206 19 14
Renfrew	6	38	5	2	3	149	...	149	...	...	19 02	2 15 14	...	...	142 18 07
Uniacke	3	25	6	5	1	51	...	13	...	...	10 18	10 18	...	...	7 ...
Caribou	2	4	2	1	1	30	...	7	...	...	07 03	07 03	...	...	2 09 23
Unproclaimed, etc .....	...	...	9	5	4	...	...	...	...	...	...	...	...	...	...
Totals	44	519	54	36	18	2575 09	...	2499 09	...	...	18	18 00 12	...	...	1727 08 14

MARCH, 1871.

DISTRICT.	Number of Mines being Worked.	Average No. of men daily em- ployed in Mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crushed.			Total yield of Gold.		
				Do.	Do.		Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	3	10	3	1	2	2	50	...	...	30	...	...	...	03	06	...	...	...	...	...	...	4	07	16
Wine Harbor	2	32	5	4	1	1	207	...	...	207	...	...	...	15	23	...	...	...	...	...	...	165	05	...
Sherbrook	14	178	11	9	2	2	1466	10	...	1466	10	...	...	08	11	210	09	...	...	...	...	620	16	10
Tangier	3	72	4	3	1	1	207	...	...	207	...	...	...	14	17	101	08	...	...	...	...	157	03	15
Montagu	2	59	2	2	...	...	78	...	...	78	...	...	309	05	7	02	...	...	...	...	...	270	02	...
Waverly	3	65	4	3	1	1	257	...	...	257	...	...	...	09	18	...	12	04	...	...	...	125	05	...
Oldham	5	35	3	1	2	2	94	08	...	94	08	...	1	11	...	1	16	08	...	...	...	145	18	21
Renfrew	8	38	5	2	3	3	183	15	...	183	15	...	...	11	02	1	18	...	...	...	...	130	01	03
Uniacke	4	18	6	5	1	1	61	...	...	30	...	...	1	02	21	1	08	09	...	...	...	34	06	...
Caribou	2	4	2	1	1	1	28	...	...	5	...	...	...	04	...	...	04	...	...	...	...	1	...	...
Unproclaimed & other Dist's.	...	...	9	5	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	46	511	54	36	18	26	32	13	...	2558	13	...	...	12	22	7	02	...	...	...	...	1654	05	17

MAY, 1871.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily em- ployed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Stormont.....	4	15	3	1	2	105	...	...	238	...	...	...	02	22	...	40	19	...	...	...	34	16	09
Wine Harbor.....	3	42	5	4	1	233	...	...	233	...	...	...	10	08	...	12	01	...	...	...	120	16	...
Sherbrooke.....	12	175	11	9	2	1650	17	...	1650	17	...	...	13	07	...	71	08	...	...	...	620	10	01
Tangier.....	3	69	4	3	1	147	...	...	147	...	...	...	18	21	...	106	16	...	...	...	139	00	12
Montagu.....	3	53	2	2	...	85	...	...	85	...	...	...	40	09	...	50	9	...	...	...	371	17	18
Waverly.....	2	64	4	3	1	278	...	...	277	...	...	...	10	12	...	130	4	...	...	...	145	16	...
Oldham.....	10	35	3	1	2	111	16	...	111	16	...	...	10	2	...	31	40	...	...	...	122	05	...
Renfrew.....	6	35	5	2	3	121	...	...	274	...	...	...	09	23	...	1	...	...	...	...	136	08	15
Uniacke.....	5	15	6	5	1	75	...	...	45	...	...	...	14	14	...	10	4	...	...	...	32	17	...
Caribou.....	2	6	2	1	1	15	...	...	15	...	...	...	1	14	...	1	14	...	...	...	25	10	...
Unproclaimed & other Dist's.	2	21	9	5	4	64	...	...	64	...	...	...	11	09	...	11	09	...	...	...	36	10	...
Totals.....	52	530	54	36	18	2885	13	...	3142	13	...	...	12	1	...	7	17	08	...	...	1786	07	07

JUNE, 1871.

Stormont.....	3	23	3	2	1	245	206	...	...	09 02	4 05 12	...	...	93	02	13
Wine Harbour.....	2	32	5	4	1	363	363	...	...	07 10	15 10	...	...	135	09	...
Sherbrooke.....	15	165	12	9	3	1191	1191	...	...	08 09	5 17 10	...	...	504	15	16
Tangier.....	4	69	4	3	1	321	321	...	...	14	1 05 04	...	...	224	09	11
Montagu.....	3	53	2	2	...	65	65	...	...	4 16 08	11 13 08	...	...	313	03	...
Waverly.....	2	58	4	3	1	252	252	...	...	12 06	16 16	...	...	154	15	...
Oldham.....	12	46	3	1	2	79 13	79 13	...	...	2 04 10 23	10 20	...	...	174	03	...
Renfrew.....	6	35	5	2	3	177	177	...	...	08 13	16 18	...	...	75	14	16
Uniacke.....	6	21	6	5	1	99	106	...	...	09 16	14 01	...	...	51	04	05
Caribou.....	2	6	2	1	1	...	...	...	...	...	...	...	...	...	...	...
Unproclaimed, &c.....	2	21	9	5	4	7	7	...	...	13 17	13 17	9	02 07	13	18	19
Total.....	57	529	55	37	18	2799	2767	13	...	12 13 23	10 20	...	...	1740	15	08

JULY, 1871.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily em- ployed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.		Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crushed.			Total yield of Gold.				
				Total number of Quartz Mills in District.		Do. Steam Power.		Do. Water Power.		Quartz Raised.			Quartz Crushed.			Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crushed.			Total yield of Gold.		
				Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.			
Stormont.....	3	12	3	1	2	250	293	10	...	621	401	10	...	100	14	07	...	...	100	14	07	...	...		
Wine Harbor.....	2	27	5	4	1	128	128	10	...	1518	...	14	16	100	17	...	...	...	100	17	...	...	...	
Sherbrooke.....	14	160	12	9	3	1050	1050	01	...	1009	603	12	...	545	05	18	...	...	545	05	18	...	...		
Tangier.....	5	107	4	3	1	278	245	...	...	1713	210	...	...	214	19	06	...	...	214	19	06	...	...		
Montagu.....	3	49	2	2	...	81	81	10	...	316	12	8	520	301	17	...	...	...	301	17	...	...	...	
Waverley.....	5	62	4	3	1	252	247	...	...	0911	...	12	05	116	16	...	...	...	116	16	...	...	...	
Oldham.....	14	50	3	1	2	150	60	08	...	102	08	4	08	12	10	23	...	...	67	10	23	...	...		
Renfrew.....	6	35	5	2	3	...	218	...	...	08	07	1	17	89	11	12	...	...	89	11	12	...	...		
Uniacke.....	4	15	6	5	1	66	95	...	...	08	16	1	10	41	09	...	...	...	41	09	...	...	...	
Caribou.....	4	9	2	1	1	46	14	10	...	117	5	3	01	15	27	04	...	...	27	04	...	...	...	
Unproclaimed & other Dist's.	1	12	9	5	4	7	7	10	...	07	22	...	07	22	2	19	12	...	2	19	12	...	...		
Totals.	61	538	55	36	19	2310	2440	19	...	1304	8	520	...	1609	04	06	...	...	1609	04	06	...	...		

AUGUST.

Stormont.....	5	16	3	1	2	300	...	277	15	...	04	21	1	16	06	...	67	14	17
Wine Harbour.....	3	44	5	4	1	335	...	335	...	...	11	03	5	17	21	...	186	06	18
Sherbrooke.....	18	159	12	9	3	883	5	883	5	...	12	08	6	09	...	...	543	15	10
Tangier.....	5	97	4	3	1	226	...	158	10	...	19	08	2	3	06	...	153	13	...
Montagu.....	4	49	2	2	...	79	...	79	...	...	2	16	17	12	...	...	224	02	04
Waverley.....	5	47	4	3	1	224	10	227	10	...	10	11	...	14	02	...	119	02	...
Oldham.....	10	50	3	1	2	81	15	81	15	...	1	19	...	7	16	...	159	13	22
Renfrew.....	7	34	5	2	3	...	...	287	...	...	6	...	...	11	18	...	85	17	06
Uniacke.....	2	10	6	5	1	9	05	50	10	...	17	10	2	11	06	...	43	14	18
Caribou.....	4	11	2	1	1	59	...	19	...	...	16	07	...	16	07	...	15	10	...
Unproclaimed & other Dist's.	2	12	9	5	4	49	10	49	10	...	04	11	...	11	10	...	10	19	...
Totals.....	65	529	55	36	19	2247	05	2448	15	...	13	03	12	...	...	...	1610	08	23

SEPTEMBER, 1871.

DISTRICT.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.		Quartz Raised.			Quartz Crushed.			Yield per Ton.			Minimum yield otherwise than from Crusher.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
				Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.				
Stermont.....	3	27	3	1	2	370	...	...	227	15	...	...	3	19	...	8	19	...	...	...	43	06	20	
Wine Harbour.....	3	41	5	4	1	200	...	...	200	...	...	...	...	10	12	...	15	13	...	...	...	105	06	...
Sherbrooke.....	18	159	12	9	3	770	11	...	770	11	...	...	...	...	11	05	30	09	...	...	432	09	20	
Tangier.....	6	96	4	3	1	279	6	...	341	10	...	...	...	...	13	12	11	14	14	...	230	11	...	
Montagu.....	3	49	2	2	...	59	10	...	59	10	...	...	...	...	5	17	09	24	04	11	...	346	08	01
Waverly.....	5	57	4	3	1	240	...	...	245	...	...	...	...	...	...	10	14	...	12	14	...	129	18	04
Oldham.....	15	54	3	1	2	219	17	...	219	17	...	...	...	...	1	04	06	21	30	8	...	266	19	17
Renfrew.....	6	35	5	2	3	282	...	...	282	...	...	...	...	...	...	07	06	...	14	13	...	102	04	12
Uniacke.....	2	6	6	5	1	13	10	...	13	10	1	11	01	11	5	19	...	20	19	...
Caribou.....	4	14	2	1	1	62	36	17	20	...	10	5	13	...	32	03	...
Unproclaimed, &c.....	1	12	9	5	4	13	...	...	13	...	...	...	...	...	...	1	01	...	1	01	...	13	13	09
Total.....	66	550	55	36	19	2509	14	...	2408	13	...	...	...	...	...	14	06	24	04	11	...	1723	19	11

OCTOBER.

Stormont.....	3	22	3	1	2	320	...	248	...	...	714	...	1313	...	...	94	04	07
W-ne Harbour.....	4	48	5	4	1	434	...	434	...	...	515	...	41612	...	...	120	10	17
Sherbrooke.....	16	154	12	9	3	83710	...	83710	...	...	1020	...	61420	...	...	455	15	10
Tangier.....	6	91	4	3	1	249	...	249	...	...	1419	...	10704	...	...	184	...	...
Montagu.....	3	50	2	2	...	114	...	82	...	...	3101311	...	08	...	...	252	09	...
Waverley.....	3	56	4	3	1	242	...	242	...	...	1023	...	12	...	...	132	14	...
Oldham.....	12	54	3	1	2	168	...	168	...	...	17	...	41014	...	...	142	18	07
Renfrew.....	6	34	5	2	3	...	...	23810	...	...	516	...	116	...	...	67	16	21
Uniacke.....	2	1	6	5	1	14	...	14	...	...	511	...	16	...	...	3	16	12
Caribou.....	2	16	2	1	1	13	...	12610	...	...	10917	...	11306	...	...	188	01	...
Unproclaimed, &c.....	1	3	9	5	4	18	...	18	...	...	...	...	...	...	...	1	04	...
Totals.....	58	529	55	36	19	240910	...	265710	...	...	12	...	81108	...	...	1643	10	02

NOVEMBER.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily em- ployed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.		Quartz Raised.			Quartz Crushed.			Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Cwt.	Lbs.	Tons.	Cwt.	Lbs.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.		
Stormont.....	3	21	3	1	2	145	...	...	95	14	...	6	16	...	09	05	...	...	...	...	32	02	15
Wine Harbour.....	3	28	5	4	1	109	...	...	109	...	...	8	19	...	4	15	04	...	...	...	48	02	05
Sherbrooke.....	13	141	12	9	3	937	...	...	936	17	...	8	13	...	1	16	14	...	...	...	401	03	04
Tangier	6	97	4	3	1	202	...	...	202	...	...	15	08	...	1	06	17	...	...	...	155	04	12
Montagu	3	48	2	2	...	92	...	...	57	...	...	3	19	08	5	12	05	...	...	...	226	16	06
Waverley	3	57	4	3	1	156	...	...	156	...	...	07	05	...	10	08	...	...	...	...	56	06	00
Oldham.....	12	50	3	1	2	...	...	...	122	18	...	13	02	...	2	11	14	...	...	...	83	06	10
Renfrew	6	34	5	2	3	...	...	...	185	05	...	7	4	...	13	20	...	...	...	...	66	17	03
Uniacke.	1	18	4	3	1	120	...	...	120	...	...	7	3	...	07	03	...	...	...	...	42	15	...
Caribou	2	17	2	1	1	37	13	...	37	13	...	18	21	...	1	04	11	...	...	...	35	12	...
Unproclaimed & other Dist's.	1	3	9	5	4	53	...	...	53	...	...	...	...	...	...	...	...	...	...	...	3	07	...
Totals.....	53	514	53	34	19	1851	13	...	2075	07	...	11	02	...	5	12	05	...	...	...	1151	12	07

DECEMBER.

Stormont.....	3	31	3	1	2	210	150	15	7	12	15	18	59	01	03
Wine Harbor.....	3	46	5	4	1	350	350	...	6	11	10	10	113	8	...
Sherbrooke.....	12	135	12	9	3	666	666	10	11	10	146	10	380	08	18
Tangier.....	6	104	4	3	1	211	211	...	13	04	16	02	139	06	12
Montagu.....	3	47	2	2	...	78	05	...	5	07	03	11	220	19	...
Waverley.....	3	57	4	3	1	226	226	...	10	17	18	21	121	02	08
Oldham.....	12	36	3	1	2	124	04	...	14	06	2	15	91	05	09
Renfrew.....	4	27	5	2	3	70	...	...	...	...	...	...	...	...	...
Uniacke.....	1	14	4	3	1	205	205	...	02	13	02	13	26	01	...
Coribou.....	2	17	2	1	1	62	80	...	1	...	21	1	83	10	...
Unproclaimed & other Dist's.	1	3	9	5	4	18	18	...	...	...	...	...	2	11	...
Totals.....	50	517	53	34	19	2220	2072	14	11	22	11	08	1237	13	02

B.

STATEMENT showing the average daily labor employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ending December 31st, 1871.

DISTRICTS.	Average men employed.	Crushing Mills employed Dec. 31st, 1871.	Steam Power.	Water Power.	Quartz, etc. Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total yield of gold.	Maximum yield per Ton.	Average yield per man for twelve months at \$18.50 N. c. per ounce.
Stormont.....	18	3	2	1	1937	05 18	.....	559 17 21	4 09	19 575 45
Wine Harbour.....	36	5	4	1	2927	10 04	.....	1538 06 16	5 17	21 790 52
Sherbrooke.....	171	12	9	3	14382	09 03	.....	6579 19 07	7 17	08 711 87
Tangier.....	88	4	3	1	2924	14 07	.....	2093 00 07	2 10	... 440 ...
Montagu.....	51	2	2	...	848	3 14 08	.....	3152 08 15	24 04	11 114352
Waverly.....	56	4	3	1	2772	10 06	.....	1427 18 12	... 18	21 471 72
Oldham.....	43	3	1	2	1374	1 04 04	.....	1718 12 12	23 10	22 739 41
Renfrew.....	36	5	2	3	2463	09 04	.....	1179 17 16	2 15	14 606 32
Uniacke.....	14	4	3	1	900	08 ...	.....	360 17 03	2 11	06 476 83
Caribou.....	10	2	1	1	479	1 01 01	2 10 00	504 15 23	3 01	15 933 88
Unproclaimed and other Districts....	9	9	5	4	281	08 ...	9 02 07	112 02 16	1 01	... 230 49
Total.....	532	53	35	18	31387	12 09 11	12 07	19227 07 04	24 04	11 668 96

No. 1.

Statement showing the number of Men Employed, Quartz crushed and Gold obtained each Month in each District.

MONTH.	STORMONT.						WINE HARBOR.						SHERBROOKE.						TANGIER.						
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	
January.....	10	40 ..		4 16 04		30	147	..	157 03		178	1651	..	718 08		12	103	260	..	135 09		23	185 09		23
February.....	13	130 ..		25 01 06		37	277	..	176 03		176	1149	..	564 04		18	75	352	..	212 05		18	212 05		18
March.....	10	30 ..		4 07 16		32	207	..	165 05		178	1466	10	620 16	10	72	207	..	157 03	15	157 03	15	157 03	15	15
April.....	15	.....		.....		25	144	..	109 ..		176	1629	15	792 05	14	71	230	..	146 16	18	146 16	18	146 16	18	18
May.....	15	238 ..		34 16 09		42	233	..	120 16		175	1680	17	620 10	01	69	147	..	139 00	12	139 00	12	139 00	12	12
June.....	23	206 ..		93 02 13		32	363	..	135 09		165	1191	..	504 15	16	69	321	..	224 09	11	224 09	11	224 09	11	11
July.....	12	293 10		100 14 07		27	128	10	100 17		160	1050	..	545 05	18	107	245	..	214 19	06	214 19	06	214 19	06	06
August.....	16	277 15		67 14 17		44	335	..	186 06	18	159	883	05	543 15	10	97	158	10	153 13	..	153 13	..	153 13	..	..
September.....	27	227 15		43 06 20		41	200	..	105 06		159	770	11	432 09	20	96	341	10	230 11	..	230 11	..	230 11	..	..
October.....	22	248 ..		94 04 07		48	434	..	120 10	17	154	837	10	455 15	10	91	249	..	184 ..	..	184 ..	..	184 ..	..	..
November	21	95 14		32 02 15		28	109	..	48 02	05	141	936	17	401 03	04	97	202	..	155 04	12	155 04	12	155 04	12	12
December.....	31	150 15		59 01 03		46	350	..	113 08		135	666	10	380 08	18	104	211	..	139 06	12	139 06	12	139 06	12	12
Total.....	18	1937 09		559 17 21		36	2927	..	1538 06	16	171	14382	15	6579 19	07	88	2924	..	2093 00	07	2093 00	07	2093 00	07	07

No. 2.

Statement showing the number of Men Employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.						WAVERLEY.						OLDHAM.						RENFREW.					
	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Grs.
January.....	35	51	...	221	...	...	45	191	...	91	01	...	35	95	...	134	02	01	42	203	...	152	01	...
February.....	68	117	...	303	17	...	44	177	...	86	09	...	39	128	09	206	19	14	38	149	...	142	18	07
March.....	59	78	...	270	02	...	65	227	...	125	05	...	35	94	08	145	18	21	38	183	15	130	01	03
April.....	53	52	10	99	17	10	60	274	...	148	14	...	35	87	12	123	09	08	35	266	...	130	06	17
May.....	53	85	...	371	17	18	64	278	...	145	16	...	35	111	16	122	05	...	35	274	...	136	08	15
June.....	53	65	...	313	03	...	58	252	...	154	15	...	46	79	13	174	03	...	35	177	...	75	14	16
July.....	49	81	10	301	17	...	47	227	10	119	02	...	50	81	15	159	13	22	34	287	...	85	17	06
August.....	49	79	...	224	02	04	62	247	...	116	16	...	50	60	08	67	10	23	35	218	...	89	11	12
September.....	49	59	10	346	08	01	57	245	...	129	18	04	54	219	17	266	19	17	35	282	...	102	04	12
October.....	50	82	...	252	09	...	56	242	...	132	14	...	54	168	...	142	18	07	34	238	10	67	16	21
November.....	48	57	...	226	16	06	57	156	...	56	06	...	50	122	18	83	06	10	34	185	05	66	17	03
December.....	47	41	05	220	19	...	57	226	...	121	02	08	36	124	04	91	05	09	27	.....	...	.....	.....	.....
Total.....	51	848	15	3152	08	15	56	2742	10	1427	18	12	43	1374	17	18	12	12	36	2463	10	1179	17	16

Statement showing the number of Men Employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	UNLACKE.						CARIBOU.						UNPROCLAIMED, &c.					
	Men.	Tons.	Cwts.	Oz.	Dwt.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwt.	Grs.	Men.	Tons.	Cwt.	Oz.	Dwts.	Gts.
January.....	9	115	.....	25	18	16	4	47	.....	53	14	.....	.....	.....	.....	.....	.....	.....
February.....	25	13	.....	7	.....	.....	4	7	.....	2	09	23	.....	.....	.....	.....	.....	.....
March.....	18	30	.....	34	06	.....	4	5	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
April.....	15	93	.....	30	16	.....	6	92	.....	40	02	.....	21	51	.....	27	.....	.....
May.....	15	45	.....	32	17	.....	6	15	.....	25	10	.....	21	64	.....	36	10	.....
June.....	21	106	.....	51	04	05	6	.....	.....	.....	.....	.....	21	7	.....	13	18	19
July.....	10	50	10	43	14	18	11	19	.....	15	10	.....	12	7	10	2	19	12
August.....	15	95	.....	41	09	.....	9	14	10	27	04	.....	12	49	10	10	19	.....
September.....	6	13	10	20	19	.....	14	36	.....	32	03	.....	12	13	.....	13	13	09
October.....	1	14	.....	3	16	12	16	126	10	188	01	.....	3	18	.....	1	04	.....
November.....	18	120	.....	42	15	.....	17	37	13	35	12	.....	3	53	.....	3	07	.....
December.....	14	205	.....	26	01	.....	17	80	.....	83	10	.....	3	18	.....	2	11	.....
Total.....	14	900	.....	360	17	03	10	479	13	504	15	23	9	281	.....	112	02	16

MINE.	COUNTY.	Quarter ending September 30, 1871.										Quarter ending December 31, 1871.										Total Quantities Sold.			
		Raised.					Sold for home consumption.					Sold for Export to home Colonies.					Exported to other Countries.								
		Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack	Round	Slack
Joggins	Cumberland	3236	325	-	-	2855	277	-	-	-	-	2951	152	93	50	3081	102	-	-	-	-	9685	729	-	-
Macean	"	50	-	95	-	-	-	-	-	-	-	244	-	294	-	-	-	-	-	-	-	569	-	-	-
New York and Acadia.	"	25	-	8	3	-	-	-	-	-	-	223	60	135	-	-	-	-	-	-	-	447	3	-	-
C. H. Black	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	-	-	-
McFarlane	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	154	-	-	-
Acadia	Pictou	36084	5113	12398	1293	12525	1220	12230	2465	-	-	27754	3537	17282	2172	3485	250	6510	-	-	-	92065	11942	-	-
Albion Mines.	"	25605	6144	3675	1772	3777	1839	29067	2412	-	-	18115	5208	1328	1067	3015	594	4836	-	-	-	65961	11172	-	-
Nova Scotia	"	4819	551	244	153	643	586	5920	37	-	-	5500	1179	671	573	825	395	3063	-	-	-	10956	1862	-	-
Intercolonial	"	15730	5910	4433	2731	21288	4777	451	-	-	-	12122	3473	1104	374	4372	1519	1257	-	-	-	41272	10215	-	-
McBean	"	-	-	13	8	-	-	-	-	-	-	83	21	6	21	-	-	-	-	-	-	183	931	-	-
Mitchell and Barton	"	-	-	-	-	-	-	-	-	-	-	37	11	26	5	-	-	-	-	-	-	44	17	-	-
Merigomish	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pictou	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. C. B. and P. Colliery	"	-	-	-	-	-	-	-	-	-	-	50	50	18	-	-	-	-	-	-	-	-	-	-	-
Block House	Cape Breton.	12	-	-	-	-	-	2795	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-
Balmoral	"	659	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3708	-	-	-
Clyde	"	8885	2194	19	27	448	-	418	-	-	-	558	-	27	22	251	-	-	-	-	-	1750	80	-	-
Galedonia	"	-	-	18	38	1224	-	12478	597	-	-	5794	1446	248	89	1362	-	3849	-	-	-	24167	1487	-	-
Gollins	"	-	-	-	-	-	-	-	-	-	-	50	10	50	10	-	-	-	-	-	-	50	10	-	-
Glace Bay	"	15478	484	1608	162	160	-	22322	-	-	-	398	796	955	146	202	-	4320	-	-	-	39008	507	-	-
Gowrie	"	11160	3340	2698	1376	6168	253	4807	4046	-	-	9160	2720	4374	764	3435	-	1019	-	-	-	485	33215	3216	-
Gardiner	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
International	"	21316	3552	-	-	-	-	40854	-	-	-	15990	3200	-	-	-	-	-	-	-	-	-	-	-	-
Lingan	"	11753	1192	418	15	192	-	13471	762	-	-	6898	1447	107	77	272	-	18740	-	-	-	80106	155	-	-
South Head	"	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2258	-	-	-	20972	968	-	-
Sydney	"	32523	3974	19543	516	16302	21	1704	798	-	-	31052	5858	17153	1105	22787	-	1155	-	-	-	24	24	-	-
Victoria	"	7547	1069	5122	924	2375	5	-	-	-	-	5008	1032	2905	222	2043	-	102149	-	-	-	102149	3345	-	-
Lorway	"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reserve	"	-	-	-	-	-	-	-	-	-	-	1800	400	-	-	-	-	-	-	-	-	-	-	-	-
New Campbellton	Victoria	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chimney Corner	Inverness.	182	25	-	-	-	-	122	-	-	-	1611	-	50	5	265	-	-	-	-	-	437	-	5	-
		195091	33873	46383	6491	68679	9038	145620	11117	143325	30610	46577	6690	45398	2860	47007	485	-	-	-	-	542945	53473	-	-

STATEMENT of the Average Number of Persons Employed : Number of Horses, Engines, etc., at each Colliery in the Year ended 31st December, 1871.

MINE.	Coal Raised.	Average Number of persons Employed.						Number of Days Labour.			Average No. of days per person.	Average No. of tons per person.	Average quantity raised per day —Tons.	No of Horses.	Number of Engines.		
		In Mine.			On Surface.			In Mine.	On Surface.	Total.							
		Men.	Boys	Total.	In Mine.	On Surface.	Total.										
Joggins	10985	60	10	14	6	90	13677	3550	17227	191	122	56	13	1	1	1	H. P.
Macan	499	3	1	4	1	5	515	266	781	156	100	4	1	1	1	1	20
New York & Acadia	669	4	—	4	1	9	71	1107	1178	131	74	37	—	1	1	1	12
C. H. Black	150	1	—	1	1	7	142	287	429	61	21	1	—	—	—	—	—
McFarlane	29	3	1	4	—	7	312	245	557	79	4	3	—	—	—	—	—
Acadia	107789	154	13	61	4	232	43989	17865	61854	266	464	409	11	—	3	3	70
Albion Mines	95659	194	41	151	31	417	58634	49950	108584	260	229	388	53	3	20	23	1350
Nova Scotia	12049	32	3	68	2	105	6976	13892	20868	199	114	60	5	1	1	1	40
Intercolonial	70282	85	24	61	10	180	25450	18520	43970	244	390	301	11	—	2	2	60
McBean	47	1	1	1	—	3	139½	273	273	91	16	—	—	—	—	—	—
Mitchell and Barton	118	3	—	3	—	4	841	258	1099	275	29	—	—	—	—	—	—
C. C. B. and P. Coll	100	2	—	2	—	4	90	90	180	45	50	2	—	—	—	—	—
Block House	5428	16	4	51	3	74	2886	8032	10918	147	73	37	20	—	2	2	90
Balmoral	12	—	—	—	—	—	26	22	48	—	—	—	—	—	—	—	—
Clyde	2545	9	2	10	—	21	1522	1352	2874	137	121	18	1	—	1	1	7
Caledonia	30488	42	5	25	1	73	11945	7574	19519	267	417	120	13	—	2	2	55
Collins	60	1	—	1	—	1	30	15	45	45	60	2	—	—	2	2	30
Glance Bay	37202	80	15	40	5	140	15171	11721	26892	192	265	236	21	—	4	4	65
Gowrie	43661	74	18	47	9	148	20220	12550	32770	221	295	199	23	—	1	1	25
International	79414	145	25	81	3	254	25097	20374	45471	179	312	540	32	—	3	3	50
Lingan	30626	59	15	45	7	126	17714	11778	29492	234	243	128	14	—	3	3	100
South Head	27	1	—	1	—	5	85	588	673	134	5	—	—	—	2	2	20
Sydney	129763	228	65	145	22	460	61320	45065	106385	231	266	587	66	2	9	11	855
Victoria	18022	36	3	46	5	90	12080	15340	27420	305	207	60	2	—	4	4	120
Reserve	2200	12	1	25	—	38	—	—	—	—	—	—	—	—	—	—	—
Chumney Corner	1818	9	—	7	—	16	1897	916	2813	176	113	9	—	—	1	1	20
																	3005

RECEIPTS.				EXPENDITURE.					
DISTRICTS.	Rents.	Royalty.	Sites.	Totals.	Salaries, Surveys &c	Return of Return of Rents. Royally.	Royalty Commission	Lands	Totals.
Oldham	\$30 00	\$520 02	7 50	557 52	297 50	2 00	45 12	-	344 62
Renfrew	220 00	437 25	-	657 25	96 00	-	22 09	-	118 09
Tangier	88 00	371 65	-	459 65	186 50	-	4 75	-	191 25
Stormont	283 50	47 02	-	330 52	180 93	54 00	8 40	-	243 33
Wine Harbor	192 00	480 63	-	672 63	233 50	-	25 84	-	259 34
Sherbrooke	152 00	2168 50	-	2320 50	360 57	-	106 85	-	467 42
Montagu	2 00	652 00	1 00	655 00	15 00	-	-	-	15 00
Uniacke	416 00	44 00	-	460 00	603 00	-	-	-	603 00
Gay's river	8 00	55 53	-	63 53	-	-	-	-	-
Caribou	14 00	79 21	-	93 21	-	-	-	-	-
Waverly	8 00	63 94	10 00	81 94	-	-	3 19	-	26 56
Ovens	34 00	-	-	34 00	-	-	-	-	-
Wagamatkook	172 00	-	-	172 00	-	-	-	-	-
Unproclaimed	148 00	-	-	148 00	15 00	-	-	-	15 00
Prospecting Licenses	- - - -	-	-	940 16	-	-	-	Ret'm	11 25
	\$1767 50	4919 75	18 50	7645 91	1988 00	56 00	216 24	-	2294 86

Supplementary account of Expenses common to both branches of the Department:—

Stationery and Printing	\$716 02
General Expenses	3418 22
	<u>\$4134 24</u>
Expenses Gold	2294 86
“ Coal	<u>\$6439 10</u>

GOLD.

Mines Department for 6 months ended December 31st, 1871.—(Canadian Currency.)

DISTRICTS.	RECEIPTS.				EXPENDITURE.				
	Rents.	Royalty.	Sites.	Totals.	Salaries, Surveys, &c.	Return of Rents.	Royalty. Commission	Lands	Totals.
Oldham	134 14	455 41	-	589 55	119 94	-	24 59	-	144 53
Renfrew	108 95	269 35	-	378 30	113 52	-	17 08	-	130 60
Tangier	64 25	686 35	-	750 60	-	1 95	80 28	-	82 23
Stormont	125 19	253 28	-	378 47	160 99	-	3 80	-	164 79
Wine Harbour	169 36	376 17	-	545 53	237 91	-	20 40	-	258 31
Sherbrooke	597 64	1557 57	-	2155 21	363 80	15 57	92 85	-	472 22
Montagu	136 27	500 00	-	636 27	-	-	-	10 00	10 00
Uniacke	35 04	137 18	-	172 22	229 87	-	10 53	-	240 40
Guys River	25 43	5 18	-	30 61	-	-	-	-	-
Caribou	89 66	156 18	-	245 84	-	-	6 08	-	23 09
Waverly	15 57	543 58	-	559 15	-	-	22 19	-	30 00
Wagamatkook	-	-	-	-	30 00	-	-	-	-
Ovens	1 95	-	-	1 95	-	-	-	-	-
Fifteen Mile Stream	11 68	-	-	11 68	-	-	-	-	-
Unproclaimed	116 80	3 00	-	119 80	21 00	30 00	-	-	51 00
Prospecting Licences	-	-	-	603 38	-	-	-	Ret'm	3 43
	\$1631 93	4943 25	-	7178 56	1277 03	47 52	277 80	10 00	1616 68

Supplementary account of Expenses common to both branches of the Department:—

Stationery and Printing	\$ 410 27
General Expenses	2888 07
	<hr/> \$3298 34
Expenses, Gold	1616 68
Coal	165 49
	<hr/> \$5080 51 C. Cy.—\$5219 70 N.S. Cy.

OTHER THAN GOLD.

Mines Department for Six Months ended June 30th, 1871.

COUNTIES.	RECEIPTS.				EXPENDITURE.			
	Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Li- censes to Search.	Return Li- censes to Work.	Surveys.	Totals.
Antigonish	\$40 00	.....	.....	40 00	.....	.....	.....	.....
Cumberland	920 00	.....	657 70	1577 70	.....	.....	.....	.....
Cape Breton	400 00	100 00	19648 00	20148 00	.....	.....	.....	.....
Pictou	180 00	.....	11362 67	11542 67	.....	.....	.....	.....
Inverness	40 00	50 00	.....	90 00	.....	.....	.....	.....
Colchester	40 00	.....	.....	40 00	.....	.....	.....	.....
Richmond	80 00	.....	.....	80 00	.....	.....	.....	.....
Victoria	60 00	50 00	.....	110 00	.....	.....	.....	.....
Halifax	20 00	.....	.....	20 00	.....	.....	.....	.....
	\$1780 00	200 00	31668 37	33648 37	.....	.....	.....	.....

OTHER THAN GOLD

Mines Department for Six Months ended December 31st, 1871.

C UNTRIES.	RECEIPTS.				EXPENDITURE.			
	Licenses to Search.		Licenses to Work.		Return Li- censes to Search.		Return Li- censes to Work.	
	Totals.		Royalty.		Surveys.		Totals.	
Antigonish	\$ 19 47	.....	.....	19 47	.....	.....	.....	.....
Cumberland	1868 95	340 69	12 50	2222 14	38 94	.....	.....	38 94
Cape Breton.....	311 52	438 03	7761 79	8511 34	77 88	.....	.....	77 88
Pictou.....	175 23	24 33	6456 65	6656 21	.....	.....	.....	.....
Inverness	97 35	49 33	.....	146 68	.....	48 67	.....	48 67
Kings.....	19 47	.....	.....	19 47	.....	.....	.....	.....
Richmond	58 41	.....	.....	58 41	.....	.....	.....	.....
Victoria	97 34	.....	.....	97 34	.....	.....	.....	.....
	2647 74	852 38	14230 94	17731 06	116 82	48 67	.....	165 49

STATEMENT

Receipts and Expenditures for Six Months ended June 30, 1871.

RECEIPTS.	EXPENDITURE.
Rents (Gold)	Salaries and Surveys (Gold).....\$1988 00
Royalty "	Return Rents.....56 00
Mill Sites "	Return Royalty.....23 37
Prospecting Licenses, do.....	Royalty Commission.....216 24
Licenses to Search (Coal).....	Return Licenses to Work.....
Licenses to Work "	Return Licenses to Search.....
Royalty "	Stationery and Printing.....716 02
	General Expenses .....3418 22
	Return Prospecting Licenses.....11 25
\$41294 28	\$6429 10

Receipts and Expenditure for Six Months ended December 31, 1871.

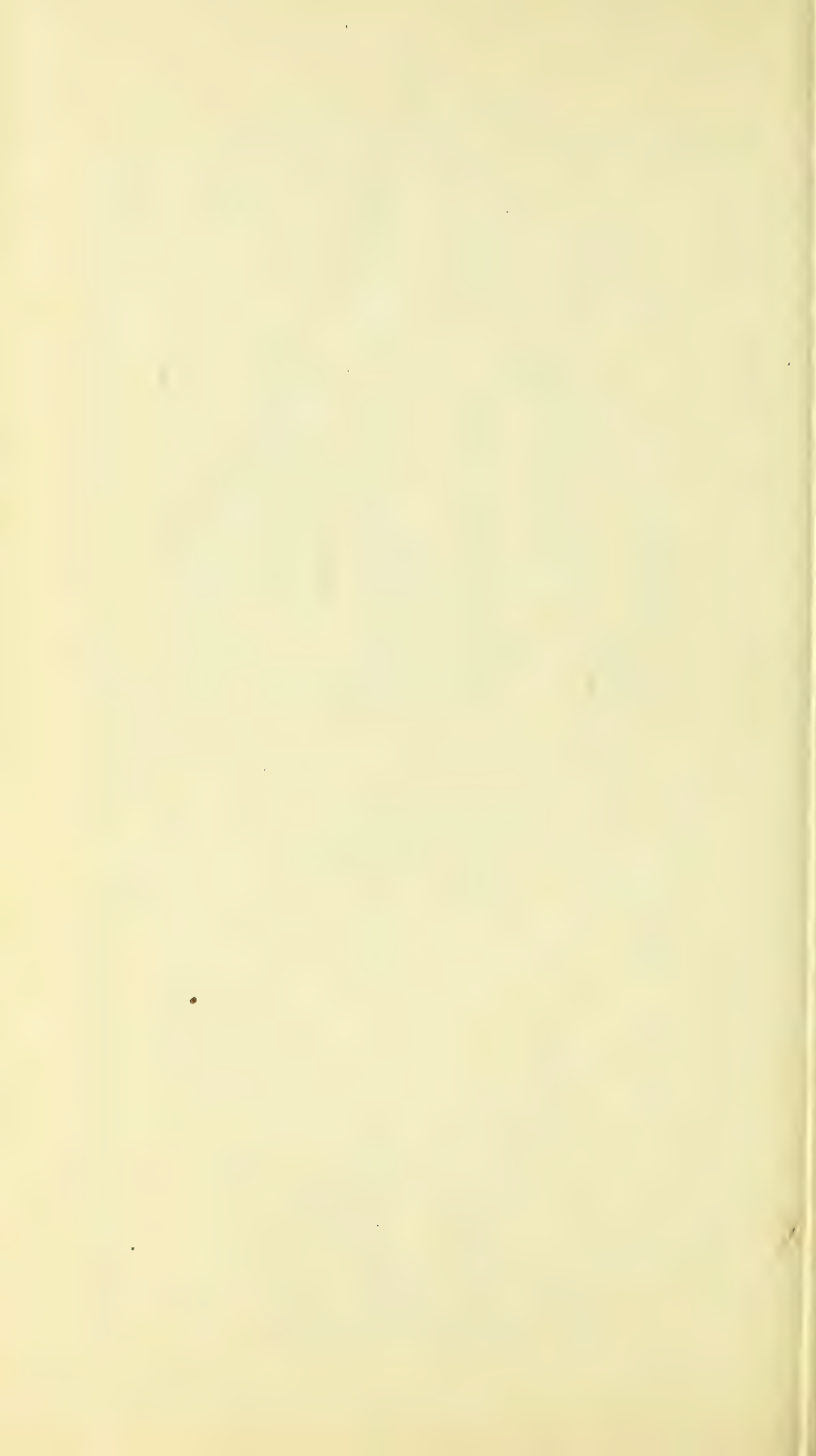
60

STATEMENT

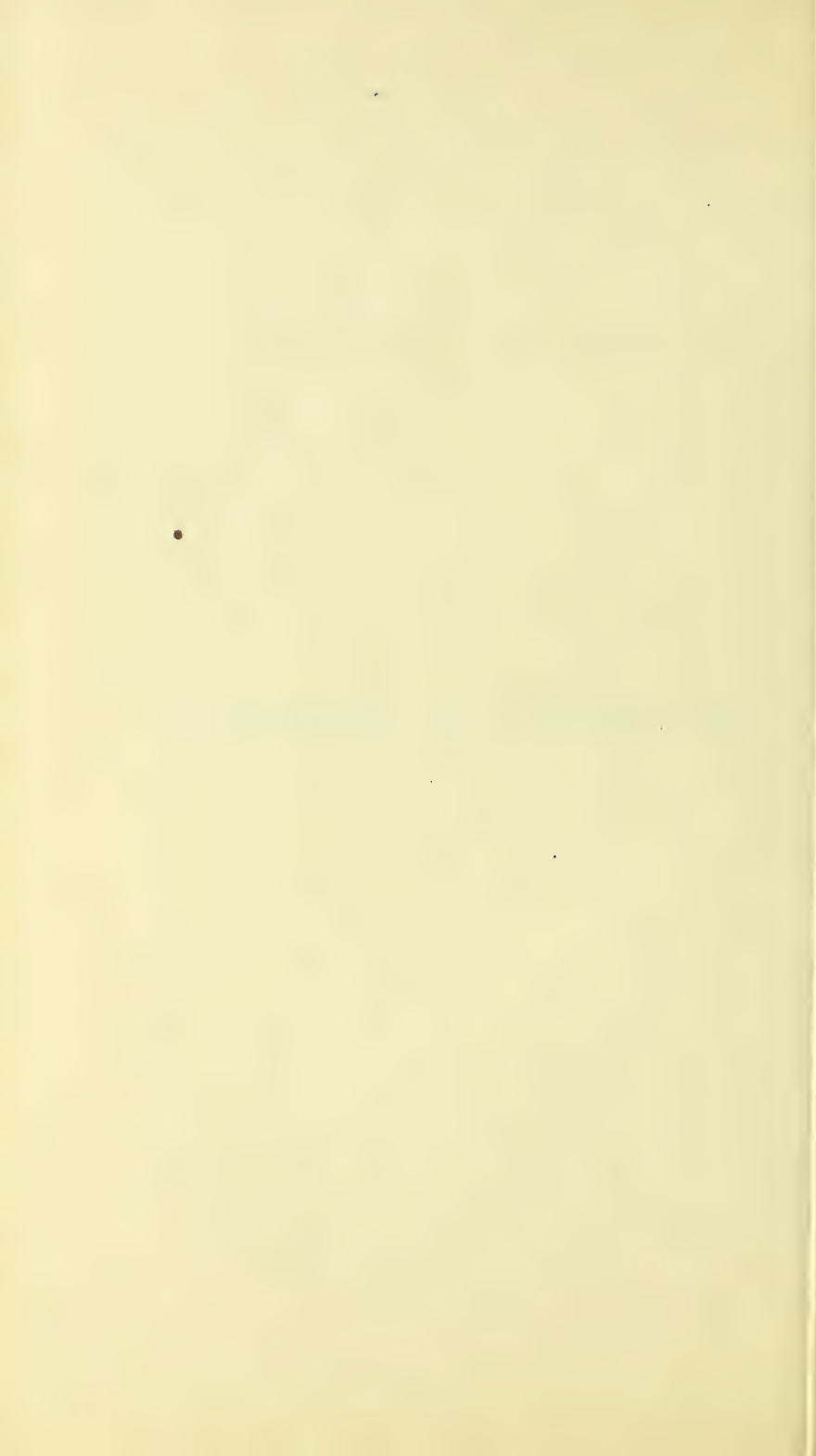
Receipts and Expenditures for Twelve Months ended December 31,

(NOVA SCOTIA CURRENCY.)

RECEIPTS.		EXPENDITURE.	
Rents (Gold).....	\$3444 14	Salaries and Surveys, (Gold)	\$3300 02
Royalty "	9998 44	Return Rents	104 83
Mill Sites "	18 50	Return Royalty	24 29
Prospecting Licenses do.....	1560 07	Royalty Commission	501 65
Licenses to Search (Coal).....	4500 27	Lands	10 28
Licenses to Work "	1075 73	Return Prospecting Licenses, do.....	14 78
Royalty "	46289 20	Return Licenses to Work (Coal).....	50 00
		Return Licenses to Search "	120 00
		Stationery and Printing	1137 53
		General Expenses.....	6385 42
	<u>\$66886 35</u>		<u>\$11648 80</u>



PROVINCIAL MUSEUM.



REPORT

ON THE

Provincial Museum.

TO THE HON'BLE WM. GARVIE,

Chief Commissioner of Mines and Works :

SIR,

In submitting a Report on the Provincial Museum, it may be necessary to give some account of its origin. In the beginning of the year 1866 I proposed to the late Andrew McKinlay, Esq., Trustee of the Mechanics' Institute of Halifax, to take the Museum of that Institution, and to make it the beginning of a Provincial Museum:

The Mechanic's Institute had become extinct, and the Museum was becoming a ruin. There were still surviving some valuable collections and many interesting specimens. Mr. McKinlay and the other trustee, James Forman, Esq., agreed to my proposal.

I also applied to the Provincial Government for accommodation in the New Provincial Building which was in the course of erection, and it was arranged and agreed to set apart for the Provincial Museum the spacious room which it now occupies. The Provincial Museum being now considered a fact, the Nova Scotia Commission for the Paris Exhibition of 1867,—of which I was the Secretary—purchased Natural History Collections, with the understanding that they were to be brought back from Paris and deposited in the Museum. The collections were: Professor How's complete collection of Nova Scotia Minerals, and his Nova Scotia Herbarium; Downs' collection of Nova Scotia

Birds, and Barne's collection of Carboniferous Fossils from Nova Scotia and Cape Breton.

When I returned from Paris, I found some difficulties had arisen which threatened the success of our project. At length, in October, 1868, I was authorized by the Government to take possession of the Museum Room. I received permission from Mr. Forman, the only surviving Trustee of the Mechanic's Institute, to remove the articles belonging to the Museum, and to deposit them in the room provided in the new Provincial Building. The Provincial Museum was then established.

Our Museum was designed to be a Permanent Exhibition of the Industrial Resources of the Province, combined with a Museum of Science and Art. How far this design has, up to the present, been accomplished, I shall proceed briefly to demonstrate.

Before entering the Museum Room, we come to a fine collection of Building Stones, Granite and Sandstones, with fine specimens of Limestones and Gypsums from various localities in Nova Scotia and Cape Breton. There is also an illustration of Brick manufacture from Lang's establishment at Shubenacadie. Besides these, there are large blocks of coal from the Albion and Acadian Mines. This is only a part of our representation of the Pictou Coal Fields. We were obliged, from want of accommodation, to erect the greater part of the Albion Mines' two coal columns, in the Province Building. This is only a beginning of the Nova Scotia (proper) Coal collection. Before us is a block of coal from Cow Bay, Cape Breton,—Block House Mines. This is the first of the Cape Breton collection. The Albion Mines are illustrated by a section of each of the shafts, by J. Hudson, Esq., C.E., the Superintendent, and the Cape Breton part is illustrated by a section of the shaft, by H. Poole, Esq., Superintendent of the Caledonia Mine. This was prepared for the Paris Exhibition. On either side of the collection of blocks of coal are the following interesting specimens: A Fossil Tree—*Sigillaria reni-*

formis—from the Albion Mines; blocks of Basalt from the Giant's Causeway, Ireland; massive Stalactites, from Gibraltar, and a Tree Stump, *Sigillaria*, from Lesmahagow, Scotland. On the walls are views of Halifax as it was nearly a century ago, and photographs of Dartmouth and the New Provincial Building by way of contrast.

On entering the room we are confronted by a continuation of the economic mineral department, by the gilded obelisk exhibited at Paris, representing the quantity of gold extracted from the mines of Nova Scotia from January, 1862, to September, 1866. This stands on a cube representing the quantity of gold extracted from Sept., 1866, to Sept., 1868. Under this is another block representing the quantity extracted from Sept. 1868, to January 1871.

The whole represents a weight of 5 tons, 8 cwt., 2 qrs., 2 lbs. A value of \$3,373,431.

The quantity given is according to the official returns.

On the steps leading to the obelisk are arranged massive specimens of *Limonite* (Iron Ore) from the Iron deposits of East River, Pictou County, Brookfield and Londonderry Mines, Colchester County; Sulphur Ore, *Sulphuret of Iron*, from Shubenacadie; Serpentine from Antigonish County; Anhydrite (gypsum) from Windsor; Marbles from Cape Breton; Limestone from Springville, Pictou Co.; Sandstones from Pictou and Hants Counties. In the Cases around the base of the obelisk is a fine collection of auriferous quartz specimens from Waverley, Mount Uniacke, Renfrew, Isaac's Harbour, Wine Harbour, Montague, the Ovens and Gay's River. The greater part of this collection, was exhibited in Paris. The International Jury awarded it a silver medal on account of its scientific value. In a case opposite is a continuation of the same department. In this we have Copper Ores from the Counties of Pictou and Antigonish. Pyrolusite and Manganite *Binoxide of Manganese* and *Hydrous Sesquioxide of Manganese*. Iron Ores from Nictau; Hematite and Micaceous specular Iron.

Ore from Polson's Lake, Antigonishe County ; Spathic Iron Ore, *Carbonate of Iron*, from Sutherland's River, Pictou County ; Limonite, *Brown Hematite*, from East River, Pictou Co., and from Brookfield, Colchester County. There is here also an interesting illustration from the Londonderry Iron Mines—the first bar of iron made at the mines---the collection sent to the Paris Exhibition by E. Jones, Esq., Manager of the Mines, consisting of Ores, Steel Iron, Puddled Steel, Cast Steel, Axe and Chisel. The steel of the collection was made with coke from the ~~Antigonishe~~ Coal Mines, Pictou. It was part of the first steel made at the mines. In the same case is a representation from the works of the Starr Manufacturing Company, Dartmouth. Here are Forbes' Patent Acme Skates, Nails, &c.

In a case near is an interesting collection, not Nova Scotian, containing large specimens of *Albertite* from New Brunswick, Cinnabar, *Sulphuret of Mercury* from Almaden, Spain, Copper Ore, *Sulphuret of Copper and Iron* and Nickel Ore, from Tilt Cove mine, Newfoundland, and *Cryolite, fluoride of Aluminium and Sodium* from Greenland.

In the Department of Scientific Mineralogy there are three collections, 1st., The Mechanics Institute collection, 2nd, The Webster collection, 3rd., Professor How's collection.

The first, the Mechanics' Institute collection, is general, and contains about 1000 specimens, I have arranged these according to Dana's manual of Mineralogy. The classification is as follows :

Class I. Gases, consisting of, or containing, Nitrogen or Hydrogen.

Class II. Water.

Class III. Carbon and Compounds for Carbon.

In this class the collection contains a small diamond, having the form of a crystal, which, according to Professor Tennant, F.G.S., occurs ten times among 1000. The specimen is Brazilian.

X

Mineral Coal, 1, with bitumen.

Anthracite.

2, without bitumen.

Pictou Coals.

Cape Breton Coal

Cannel Coal

Oil Coal

Albertite from New Brunswick, and Scotland.

Jet.

Graphite, Plumbago, a variety of specimens.

Amber.

Mineral Caoutchouc, Elastic Bitumen.

Asphalt.

Class IV. Sulphur, Native Sulphur, with Celestine, fine specimens.

Class V. Haloid Minerals.

“ Rock Salt.

“ Borate of Soda.

Heavy Spar, *Sulphate of Baryta*.

Crystalline, and other firms, in great variety,

Celestine, *Sulphate of Strontia*.

Gypsum, *Sulphate of Lime*.

Selenite.

Fibrous Gypsum.

Gypsum, white, grey, Red, &c.

Anhydrite, *Anhydrous Sulphate of Lime*.

Calcareous Spar, *Carbonate of Lime*.

Nail-head Spar, a beautiful specimen.

Dog-tooth Spar. “ “

Iceland Spar. “ “

Satin Spar.. “ “

Chalk.

Salactites, Gibraltar, Bermuda, Mammoth

Cave, Kentucky.

Limestones.

Aragonite

Dolomite, *Magnesian Carbonate of Lime*.

Pearl Spar.

Rhomb Spar.

Ankerite.

Apatite. *Phosphate of Lime*.

Crystalline and Massive.

Fluor-Spar. *Fluate of Lime*.

Crystalized.

White, Green, and Purple.
 Brucite. *Hydrate of Magnesia*.
 Wavelite.

Class VI. Earthy Minerals.

1. Silica,

Quartz.

Rock Crystal. Numerous Specimens.

Amethyst. do.

Rose Quartz.

Smoky Quartz.

Avanturine.

2. Chalcedonic Varieties.

Chalcedony.

Chrysoprase.

Carnelian. Red, White, Oriental.

Agate.

Fortification.

Moss Agate.

Onyx.

Flint.

3. Jaspers Varieties, abundant and beautiful.

Opal.

Semiopal.

Cacholong.

Hyalite.

Wood Opal.

Silicious Sinter.

Magnesia.

1. Hydrous Silicates of Magnesia.

Tale—Foliated.

Soapstone.

Chloride.

Serpentine, Precious.

“ Common.

Anhydrous Silicates of Magnesia.

Pyroxene.

Coccolite.

Asbestus.

Augite.

Hornblende.

Tremolite.

Chrysolite, Olivine.

Alumina.

Spinel Ruby.
 Zeolite Family.
 Heulandite.
 Brewsterite.
 Stilbite.
 Apophyllite.
 Laumontite.
 Natrolite.
 Thompsonite.
 Analcime.
 Chabazite.
 " Acadiolite. Nova Scotia.
 Prehnite.
 Andalusite.
 Staurotide.
 Orthoclase. Common Feldspar.
 " White, Red, Green.
 " Moonstone.
 Labradorite.
 Epidote.
 Garnet.
 " Common.
 " Precious.
 Tourmaline.
 " Black.
 Rubellite. Red Tourmaline.
 Mica. Muscovite.
 Lepidolite.
 Fuchsite.
 Topaz.
 Lapislazuli.
 Beryl---Emerald.
 Zircon.
 " Hyacinth.

Class VII. Metals and Metallic Ores.

Titanium.
 Rutile.
 Tin Ore. *Oxyde of Tin.*
 Molybdenite. *Sulphuret of Molybdenum.*
 Gray Antimony. *Sulphuret of Antimony.*
 Arsenic.
 Orpiment. *Yellow Sulphuret of Arsenic.*
 Pitchblende. *Oxide of Uranium.*
 Uranite.

Iron.
 Native Iron. *Meteorite.*
 Iron Pyrites.
 Mispickel. *Arsenical Iron Pyrites.*
 Magnetite, Octahedral Iron Ore.
 Specular Iron Ore.
 Micaceous Iron,
 Red Hematite.
 Clay Iron Stone.
 Iron Glance.
 Limonite. *Brown Iron Ore.*
 Brown Hematite,
 Bog Iron Ore.
 Chromic Iron. *Chromate of Iron.*
 Spathic Iron. *Carbonate of Iron.*
 Manganese.
 Pyrolusite. *Binoxide of Manganese.*
 Manganite. *A Hydrous sesqui oxide of Man-*
ganese.
 Wad. *Bog manganese.*
 Copper Nickel. *Arsenical Nickel.*
 Smaltine. *Tin White Cobalt.*
 Blende. *Sulphuret of Zinc.*
 Zincite. *Red Zinc Ore. Red oxide of Zinc.*
 Cinnabar. *Sulphuret of Mercury.*
 Native Copper.
 Copper Pyrites. *Sulphuret of Copper and*
Iron.
 Erubescite, *Variegated Copper Pyrites.*
 Grey Copper.
 Ruby Copper Ore.
 Blue Vitriol. *Sulphate of Copper.*
 Malachite. *Green Carbonate of Copper,*
 Azurite. *Blue Carbonate of Copper.*
 Noble Metals.
 Native Platinum.
 Native Gold
 Native Silver.
 Brittle Silver Ore. *Sulphuret of Silver and*
Antimony.

The second, or "Webster Collection" contains about 700 specimens. These were collected by the late Dr. Webster, M.P.P., who was well known in Nova Scotia and elsewhere

as an enthusiastic naturalist. The collection was presented to the Museum by Mrs. Webster, on the condition that it should be kept distinct and designated as I have indicated. This collection is largely Provincial, and consequently does not include so many varieties of minerals as the first collection. Although its general aspect is Provincial, it still contains many foreign minerals. Some of which are much better specimens than those found in the other collection. This collection is also arranged according to Dana's system. Classes III and IV are represented by many excellent specimens. The collection mainly belongs to Class VI. Earthy Minerals, Silica, Quartz, Vitreous Variety, Rock Crystal, has several beautifully regular Crystals.

Amethyst occurs in great abundance. Two very fine specimens have figured prominently in the collections of Nova Scotian minerals exhibited in London, Dublin and Paris.

Chaledonic varieties are numerous and beautiful; Fortification and Moss agates.

Opal, varieties, Cacholong, Hyalite, (Foreign), and Wood Opal Magnesia, *Hydrous Silicates*, Talc, Soapstone, Chlorite, Serpentine, precious and common (Foreign).

Anhydrous Silicates, Augite.

Hornblende, light varieties, Tremolite, Actinolite, Asbestos, Mountain Leather (Foreign).

Zeolite Family, Heulandite, Stilbite, Apophyllite, Natrolite, Thomsonite, Native and Foreign, Analcime, Chabazite, Acadiolite, Prehnite, some of these in great variety and beauty, many of them gems.

There are also very large Beryls (Foreign) and excellent specimens of zinc ores and native copper from Lake Superior. The third collection is Dr. How's Paris Collection. This is altogether Nova Scotian. It contains choice specimens of all the minerals found in the Province, whether of scientific or economic value; many of the Cabinet Minerals specimens are rare and beautiful. All the new minerals from the Trap of the Province, discovered by Dr. How,

are included in the collection. To this is added the best collection to be had of the Borates, also discovered by him in the Gypsums of Windsor.

I have thus given a detailed account of the mineral collections in the museum, for the purpose of showing what we have and what we do not have. The mineralogist can thus easily see that while there are some minerals wanting our combined collection is extensive and valuable, and well adapted for the purpose of instruction in the science of mineralogy, and especially the mineralogy of Nova Scotia.

The next department in the Museum is that of Geology and Palacontology. Here we have a large collection of rock specimens, principally Provincial, viz: Granites, Syenites, Diorites, Felsites, Porphyries, Dolerites, Traps, Trachytes, Serpentine, Schists, Quartzites, Argillites, Breccias, Conglomerates, Sandstones, Marbles, Limestones, Gypsums. These represent the geological formations of Nova Scotia and several other countries. The geology of Nova Scotia is further illustrated by Dawson's Map of Nova Scotia, by Professor Hind's Maps of the Gold Fields, by Logan and Hartley's Map of the Pictou Coal Field, by a Progress Map of the Geology of Pictou County, on a scale of an inch to the mile. (The Topographical lines are from the map of Pictou County, by Churchill.) By a field map of the precarboniferous formations underlying the Pictou Coal Field, made for the Canadian survey, with sections, by a geological map of Antigonish county, and a geological map of Arisaig, with sections, all by the writer, and by beautiful and accurate views, in water colours, of the Junction of the Upper Silurian and Lower Carboniferous formations on the shore near McAra's Brook, Airsiag, by Kate McDougall, (Mrs. Wilson) and of the carboniferous limestones on the Avon, at Windsor, by Professor Nichols.

General Geology is illustrated by Maps and Sections of the Canadian Survey, by Geological maps, with sections of England, Scotland and Ireland, by a geological model of

the Isle of Wight, and maps of the memoirs of H. M. Survey of Great Britain and Ireland.

In the Palaeontological Section.—The Palaeontology of the Nova Scotia Silurian system is illustrated by my Arisaig collection. In this the fossils or remains of animal existence found in the Silurian Rocks of Arisaig, are arranged Geologically and Zoologically. There are 1st., Fossils of the Medina Sandstone, U. S., age. 2nd., of the Lower and Upper Clinton, U. S., age, Middle Silurian. 3rd., F. of the Niagara Limestone, U. S., age. 4th., of the Lower Helderberg, U. S., age, Upper Silurian. Each group is also arranged by beginning with the lower forms of life and ending with the upper, so that the order of formations and life in each beginning from the left of cases, is *ascending* and from the right, *descending*. The Arisaig Rocks are typical of Nova Scotian Geology between the Gold fields and Coal fields, and this collection is *par excellence*. The Arisaig collection. It has been examined by the first Palaeontologists in Europe, and was awarded Medals in London, 1862, Dublin, 1865, and Paris, 1867. The fossils, as far as they have been determined, are named by Hall, Salter, Barrande, Billings and Dawson:

There are also collections of fossils from corresponding formations of East River, McLellans Mountain, Sutherlands River, French River, Barney's River, Marshy Hope, and Lochaber. The whole forms a key to the age and succession of the Precarboniferous Rocks of Antigonish, Pictou, and Colchester Counties.

The Palaeontology of the Silurian formations of the Western part of the Province is illustrated by the Geological part of the "Webster Collection." There are abundance of Slates from Beech Hill, King's County, covered with the pretty sea-fans, *Dictyonema Websteri*, and fossils corresponding with these of the Upper Silurian of the East. In the same collection are specimens of the Nictau Iron ore, filled with fossils considered to be of Devonian age. In my own col-

lection and also in the "Webster Collection" are abundance of fossils from the Lower Carboniferous Limestone from Cape Breton and Nova Scotia, East, Middle and West. From Limestone of the same age in Baddeck, Cape Breton, is a noble fossil, a fish spine. *Ichthyodorulite*, *Gyracanthus magnificus*. This was found by Mr. Kidston and presented to the Museum by the late Mr. Barnes, C.E. The fish to which it belonged must have been of gigantic size. In Barnes' collection there is another unique specimen found in the Coal Measures of Cape Breton. The specimen is a wing of a fly, it must have been a Dragon-fly, measuring 7 inches across the wings. The wing is overlaid partially by a fern, the insect has been named *Hoplophlebium Barnesii*, by Scudder. Barnes's collection, with these exceptions, consists of fossil plants of the Coal formation. This with the addition of the Mechanics Museum collection and a few contributions includes *Pinites*, *Sigillaria*, *Stigmaria*, (roots of *Sigillaria*) *Calamodendra*, *Lepidodendra*, *Lepidostrobus*, (Fruit) *Calamites*, *Equisetites*, *Asterophyllites*, *Suenophyllum*, *Pinnularia Filices* (Ferns,) *Cordaites*, *Sporangites*, *Antholites*, *Trigonocarpum*, *Hookeri*, &c. I would particularly notice one rare specimen in this collection, a Fern of the genus *Neuropteris* with fronds undeveloped, (in veneration.) In the "Webster Collection" there are also several excellent specimens of Carboniferous plants and also in my own collection. In the last collection there are teeth, spines, and scales of fishes of the same period, teeth of *Diplodus*, *Rhizodus*, and *Holoptychius*. In the "Webster Collection" animal tracks (*ichnites*), and a foot-print of a *Sauropus*, (reptile), from Parsboro' lent by J. M. Jones, Esq., F.L.S. There is also the *Dendrerpeton Acadianum*, a Joggins reptile, restored by W. B. Waterhouse Hawkins, Esq., F.G.S. The remaining specimens connected with Nova Scotia are the large thigh-bone of the great Mastodon, of the Elephant family, from Middle River, Cape Breton, and a tooth of a small Mastodon. from Baddeck, C. B.

General Paleontology is represented by two collections,

the largest, which is arranged in the side cases, begin with the oldest known fossils, if fossil it is, the *Eozoon Canadense*, and ends with fossils of the human period. The fossils are Canadian, Bohemian, English, Nova Scotian, French, and American, and belong to the *Eozoic*, *Palaeozoic*, *Mesozoic* and *Cainozoic* periods, representing the succession of life on the Globe. The other collection is not so extensive. It commences with the primordial, or what has been, until lately, generally considered the earliest period of animal existence and ends with the human period. The fossils in this collection are from America, New Brunswick, Canada, Nova Scotia, England, and Mount Lebanon. The greater part of these have been presented to the Museum by the Rev. P. G. McGregor, Dr. Dawson, Dr. Hattie, Mr. Wesley, Mr. Barnwell, and Capt. Piggie, Mr. Maffet, and Mr. Skelley of the ship Northumbrian.

This part is illustrated by a Geographical and Palaeontological Chart constructed by the writer so as to include the Geology and Palaeontology of Nova Scotia, by a Stratigraphical and Paleontographical Chart, by a number of large figures of fossil-reptiles, *Ichthyosauri* and *Plesiosauri* and a series of Magic Lantern Slides, having pictures of fossils and restorations prepared for the purpose of illustrating the Geological Record of Creation. These slides are painted by Mr. Alfred Tennyson Barret, Artist, Halifax.

The Mineralogical and Geological departments which I have thus sketched form the larger part of the Museum, so that our institution may be regarded as to a large extent a Museum of Practical Geology. This impression, together with the conviction that our Provincial prosperity largely depends on the development of our mineral resources induced me to propose the establishment of a Provincial School of Mines in connection with it, in the same way as the Royal School of Mines is established in connection with the Museum of Practical Geology in Jermyn Street, London. I made the proposal in the columns of the "Morning Chronicle," in which I urged the necessity of such an insti-

tution' for the welfare of our Province. I also adduced the example of other countries having mineral wealth and Schools of Mines. I also described the course of study connected with a proper School of Mines. I showed that Halifax was the best possible seat of a School of this kind, as it was situate in the centre of Gold Mines and metallurgical operations connected with Gold Mining, as it was of easy access by railway to Iron Mines and extensive Iron and Steel Works, and at no great distance from Coal Mines and Works. I also showed that we had eminent professors in our colleges, whose teachings might be made available in the course of study proposed, and that the departments of Mines and Crown Lands might be available for other parts of the same course. In this way I considered that an efficient School of Mines could be equipped at a very moderate expense, and with an incalculable amount of advantage.

I was glad to find that the proposal was well received by the Press, that it was strongly advocated from the Academic chair, and that it was approved by the public.

Considering that a School of Mines would be established at no distant time, I requested and received the sanction of the Chief Commissioner of Mines to inaugurate a class of Geology and Palaeontology as a pioneer to the proposed institution. This class is now in its second session. Last session I had eight students. I have eleven this session. I have not as yet given publicity to this class, otherwise, I believe that respectable as the number now is, it would have been much larger.

It is to be hoped that the Legislature will take some decided action in this matter this session, and establish a Provincial School of Mines.

The next department in the Museum—Botanical—contains an extensive and well arranged collection of Nova Scotian Plants. There is also a neat collection of Nova Scotian Woods, a large collection of paintings of Native Wild Flowers, and interesting and curious collection of

Vegetable productions from foreign countries, and a beautiful collection of *Algae*, marine plants, from the Island of Jersey. In the agricultural section there are a few cereals — grains — specimens of Nova Scotian Hemp and Flax, and the elegantly plaited straw work by Mrs. Begg and Miss Turner exhibited in Dublin and Paris.

The next department in the Museum is the Zoological. This is the most extensive and attractive part of the Museum. It is classified thus: Subkingdoms 1. Vertebrates. 2, Articulates. 3, Molluscs. 4, Radiates. 5, Protozoans. The first, Vertebrates, including mammals, birds, reptiles and fishes, occupies the greater part of the wall and centre cases. Man is represented in the first wall case by plaster casts, skulls and other anatomical specimens; other mammalia are generally small in size, and not very numerous. Our limited accommodation will, in the meantime, prevent us from making many accessions to this class. The specimens are:

Bats, *Vespertilio Subulatus*.

Wild Cat, *Blarina talpoides Lynx Rufus*.

Poodle Dog, *Maltese*.

Weasel, *Mustela Cicognanii*.

Skunk, *Mephitis Mephitica*.

Seal, *Calocephala Vitulina*.

Squirrel, flying, *Pteromys Sabrinus*.

Squirrel, striped, *Tamias Listeri*.

Squirrel, red, *Sciurus Hudsonicus*.

Squirrel, black, *Sciurus Cinereus var niger*.

Rat, brown, *Mus Decumanus*.

Rat, black, *Mus Rattus*.

Mouse, *Mus Musculus*.

Porcupine, *Erethison Dorsatum*.

Woodchuck, *Arctomys Monox*.

Hare, Newfoundland, *Lepus Glacialis*.

Rabbit, Nova Scotian, *Lepus Americanus*.

Pangolin, *Manus Pentedactylus*.

Armadillo, *Dasypus Unicinctus*, Lin.

Musk Deer.

Here is a skeleton of the Walrus, and of the Porpoise, Elephant's teeth, horns of the Antelope family, antlers of Moose *in the velvet*, and otherwise, antlers of the Carribou in great variety and of noble proportions. All these are of scientific value. This subdivision of the Vertebrates is illustrated by beautiful drawings of Nova Scotian Mammals, executed from the life, by Bernard Gilpin, Esq., M. D. The habits of the Beaver are illustrated by an exquisite model of a Beaver dwelling, modelled from Beaver dwellings at Lake Rossignol. It is accompanied by a beautiful pencil drawing of a Beaver dam, Beaver cuttings, food and bedding. This illustration attracted the attention of Naturalists and others at the Paris Exhibition. It is equally attractive in the Museum. It is the work of Capt. Hardy, R. A.

There is a large collection of birds, the greater part is Native. Downs' Paris collection which received a Silver Medal was the beginning of the Museum Collection. The additions made by T. T. Egan, Taxidermist, are artistic and life like, the taxidermy being of the first class.

The *Raptores* birds of prey are well represented. The Bald Eagle, *Haliaetos Leucocephalus* with quarry is a noble specimen. The collection of Nova Scotia Owls is complete. 1, Great Horned Owl, *Bubo Virginianus*. 2, Long Eared Owl, *Otus Wilsonianus*. 3, Short Eared Owl, *Brachyotus Cassinii*. 4, Saw-whet Owl, *Nyctale Acadica*. 5, Hawk Owl, *Surnia ulula*. 6, Barred Owl, *Syrnium nebulosum*. 7, Sparrow Owl, *Nyctale Richarsonii*, Snow Owl, *Nyctale Nivca*. The *Insessores* or Perchers are numerous, but the collection is somewhat defective. The *Rasores* Scraping birds, include the foreign birds, Pheasants and Peacocks. There are the Newfoundland Ptarmigan *Lagopus Salicatus*, winter and autumn plumage, Quail, and the greater part of the Native birds belonging to this order.

The *Grallatores*, Waders and *Natatores*, Swimmers, include rare and beautiful birds. These orders are well represented by natives exclusively. The birds are all arranged in the wall cases. The centre-counter cases contain skeletons of birds, a Mummy of Penguin and egg, taken from a considerable depth in the Guano of the Island Ichabod. Among the nests are the Edible Swallow's nest, the Little N. Scotia Humming bird's nest with a pair of eggs, and the eggs of the Ostrich, and the Emu, &c.

In the class Reptiles :

1 Chelonians, are the Snapping Turtle. *Emys pietoa*, painted Turtle, Nova Scotian.

2 Saurians, Alligators, Chameleons, Lizards, Iguanas, wet preparations, and stuffed.

3 Ophidians, Serpents, Snakes, native and foreign, preparations, skins of Boa Constrictor and Rattle Snake.

4 In class Amphibians are Toads, Tree-Frogs, Frogs, Tritons, Salamanders, wet preparations, and West India Frogs, stuffed.

In the Class Fishes, Nova Scotian Fishes preserved in the same manner as in our collection sent to the Great International Exhibition of London, 1862, and Paris, 1867. This collection is ornamental as well as useful. It is the largest collection yet made.

- 1 Sea Bass, *Labrax lineatus*.
- 2 White Perch, *Labrax rufus*.
- 3 Sculpin, *Cottus virginianus*.
- 4 Norway Haddock, *Sebastes norvegicus*.
- 5 Spotted Wrymouth, *Cryptacanthodes maculatus*.
- 6 Eel Pout, *Zoarces anguillaris*.
- 7 Mackerel, *Scomber scomber*.
- 8 Dollar Fish, *Rhombus triacanthus*.
- 9 Cat Fish, *Pimelodus cattus*.
- 10 Bill Fish, *Scomberesox storeri*.
- 11 Brook Trout, *Salmo fontinalis*.
- 12 Sea Trout, *Salmo canadensis*.
- 13 Salmon, *Salmo Salar*.

- 14 Smelt, *Osmerus viridescens*.
- 15 Shad, *Alosa prestabilis*.
- 16 Alewife, Gaspereau, *Alosa tyrannus*.
- 17 Tom Cod, *Morrhua pruinosa*.
- 18 Cod, *Morrhua vulgaris*.
- 19 Haddock, *Morrhua aeglefinis*.
- 20 Pollack, *Merlangus Carbonarius*.
- 21 Cusk, *Brosmius vulgaris*.
- 22 Lump Fish, *Lumpus vulgaris*.
- 23 Sharp Nose Sturgeon, *Accipenser oxyrinchus*.
- 24 Eel, *Anguilla vulgaris*.

It includes many rare and curious specimens. There is a great number and variety of Foreign Fishes, wet and dry preparations, e.g., Flying fishes, Dolphins, Sharks, and a small Sawfish. There are several fish skeletons representing different orders. There are formidable swords of *Xiphias gladius*, Sword Fish, &c., Saws of the Saw Fish from 6 inches to 8 feet in length. The largest is the weapon of a monster.

In the sub-kingdom, Articulata, there are Land Crabs and Sea Crabs, Lobsters, *Homarus Americanus*, very small and very large. *Limulus Polyphemus*, Horse-shoe Crab and *Cymothoa triloba* the modern representative of the ancient trilobite found as parasites, on the Cod-fish of our Banks. The Cymothoas are prepared wet and dry. There are also Barnacles, Centipedes, Scorpions, Tarantulas, Mason Spiders, Beetles, Locusts, Cicadas, native Moths and Butterflies. There is connected with the *Lepidoptera* a beautiful collection of Cocoons and raw Silks from India and Turkey; of Insect Architecture, there are the nests of the Mason Spiders, *Mygale cementaria* from Palestine, and Georgia, U.S. Hornet's, Wasp's, and Marabunta's nests.

In sub-kingdom 3 *Mollusca*, there is a collection which may be regarded as Typical, every Class and Family is at least represented, from the Cephalopod Argonanta to the *Teredo navalis* ship worm. The specimens are dry and wet. Of the *Cephalopoda*—a gigantic Calamary or Squid pre-

served in alcohol is an unusual specimen. Two valves or shells of the Giant Clam—*MACTRA GIGANTEA*, weighing 87 lbs., attract attention and the illustration of the form and ravages of the ship worm, is interesting and instructive.

In the sub-kingdom 4. *Radiata*. There are Sea Urchins, *Echini*, native and foreign, and *Holothuria*, Sea Cucumber and Star fishes. *Astrophyton*, *Urasters* and *Ophiouras*—native and foreign. There is also a great variety of Corals and *Gorgonia*—Sea Fans. A *broken bottle* with a brain coral and a branching coral, is a curious specimen.

In the sub-kingdom 5. Protozoa—are native sponges, wet and dry preparations, and two specimens of the beautiful Siliceous skeletons of the *Euplectella speciosa*, Venus's Flower Basket—sponge—from the shores of the Phillippine Islands.

I have thus given the classification of the Zoological department of the Museum and pointed out its leading peculiarities. The growth of the department has been somewhat remarkable. About two years ago I was ashamed of its poverty, now, I can speak of its richness. Our fishermen are continually adding to its numbers, and so are captains of our own and foreign vessels. Mr. Egan, our Taxidermist, contributes to it every rare bird that comes into his possession. Since I described the Reptiles, Mr. West has contributed a considerable addition to our tropical—Chelonians, Turtles, Saurians, Aligators, Ophidians, Snakes and Articulata Centipedes. The student of zoology can have no difficulty in finding illustrations in the Museum. The student of comparative anatomy can find in it skeletons and characteristic parts of the various classes of *vertebrata* and *invertebrata*, and the student of botany can derive a good amount of instruction from the Herbarium and other specimens.

Mr. Barrett has also added illustrations to the Zoological department. He has prepared a beautifully accurate series of Magic Lantern Slides to illustrate the classification of the Zoological Department.

The institute of Natural Science, now holds its meetings in the Museum, and its collections are associated with ours. I have no doubt that this arrangement will advance the interests of the institute and the Museum, and consequently of science in Nova Scotia.

In the Ethnological Department, New Zealand contributes a battle axe, plain and ornamental paddles, Fishing hooks and agricultural implements. The New Hebrides—articles of dress, bow and arrows and an idol. Kingsmill—an elegantly mounted stone adze. The Sandwich Islands—clubs and spears. The West India Islands—a model of a Carib's dwelling with appurtenances, a manguera for preparing Cassava starch, a quiver of poisoned arrows, bows and arrows, clubs and an elegant stone tomahawk. Paraguay—hat, bridle, and bolas, for catching wild cattle. Mexico—riding suit, bridle and wooden stirrups. Oregon—mule girth and stirrup. Indian Tribes—Digger Indian Jacket, Indian hunting suit. Crow Indians—moccasins. Delaware Indians—moccasins. Red River—Indian calumet, an elegant stone pipe, moccasins of half-breeds, Indian Chief's hat, Indian hat and collar. Aleutian Islands—plain and ornamental dresses. Greenland—hunting spear, and a beautiful model of a fully equipped Kayak. Mic-Mac—quill and bead work. Japan—a model of the interior of a Temple. China—mandarin hat and boots, lady's boot, shoes, umbrellas, bow and arrows, divining compass, money balance, fishing rod, &c. India—paintings on mica, illustrating Hindoo customs, Burmese writing tablet, rattan, and other curiosities. Africa—Mandingo costume and weapons, and other articles of costume from the west coast. Turkey—an elegant sabre, with Damascus blade, presented by His Honor Sir Hastings Doyle, Lieutenant-Governor of Nova Scotia, and a Turkish Hookah. Russia—a sword from the battle-field of Balaclava. Prussia—a needle-gun from the battle-field of Sadowa.

In the Department of Antiquities. The phosphate bed of South Carolina, which has supplied us with teeth and

tusk of mammoth *Elephas Americanus* and the teeth of the great shark *Carcharodon megalodon*, has contributed a beautifully formed *flint spear-head*, an evidence of man's existence on the spot where these remains of extinct animals are entombed, and giving occasion for the belief, that these animals and man were contemporaries. Indiana and Texas contribute similarly formed spear and arrow heads. In the general and "Webster Collection" there is a great number of stone axes, chisels, goudges, spear heads, arrow heads, pipes, and other stone implements, from Nova Scotia and stone hatchets, from Prince Edward's Island.

It is possible that the hands which formed these spear and arrow heads might have discharged arrows so armed at the tough sides of the Mastadon Giganteus, or they might have been formed at a much later period, although beyond the time of the earliest traditions. Egypt contributes a bronze household God, and Pompeii, some of its remains of Pottery. There are also numerous relics of the French occupation of Louisburg and LaHave.

In the Department of Numismatology—There are ancient Greek and Roman coins, a complete series of casts of Roman coins chronologically arranged. Suits of British and Continental, North and South American, Indian and Colonial, Chinese, Japanese, and Siamese coins. There are Gold, Silver, and Bronze medals, and numerous medallion casts.

In the Fine Arts, we have—Busts of the Queen, Napoleon the First, Homer, Shakespeare, Wilson, Dickens, Watt, Franklin, Lord Clyde and Volta.

Paintings—Sir Humphry Davy, Wollaston, Gilbert Davis, S. G. W. Archibald, McKinlay, and Dr. Grigor. Copies by Valentine or originals.

In Naval Architecture—There are several ship models from the Paris Exhibition, and Local Exhibition of 1868, and Robinson's patent Topsail Clew and Thimbles.

In Mechanics—There is the model of a steam engine, and

Cutlip's model of shear mast and shears formerly used in H. M. Dockyard.

There is also a large collection of Philosophical apparatus belonging to the Mechanic's Institute, and a Library, containing many valuable scientific works.

The collections I have described, fill, I may say crowd, our noble apartment. It would require at least another room, one half the dimensions to afford proper accommodation. Our institution is popular. This is evident from the interest excited and from the readiness manifested by contributors to add to its treasures.

The multitudes that visit the Museum, are from country and town. Our register shows that our visitors are of every class and from every country—many come to be amused, many to be instructed—of the latter, there are inquirers who desire information, which the Museum is intended and fitted to impart—information, in reference to our natural history, or in reference, to the nature and extent of our resources.

The success of the institution is far beyond the most sanguine expectation. It was regarded as an experiment—it is a successful experiment. What has been done teaches what may yet be done. In a few years Nova Scotia may possess a Museum, and Exhibition of her resources without an equal in the Provinces.

I would say, its success is mainly due to the exertions and cordial support of your predecessor, the Hon. Robert Robertson, without these indispensable requisites, the project would have proved a failure.

Allow me to express my obligations to yourself for hearty support and encouragement. I had reason to expect these when you came into office.

I was assured, from the existence of a long and cordial friendship—from the interest you have invariably taken and manifested at home and abroad, in my feeble

efforts to illustrate the past history of our Province and its earliest inhabitants—and to illustrate the character of our country, its resources and its present inhabitants, in the Great Exhibitions of 1862, 1865, and 1867.

I have the honor to be,

Your most obedient servant,

D. HONEYMAN.

Provincial Museum, March 4, 1872.

PROVINCIAL

SCHOOL OF MINES.

COURSE OF STUDY PROPOSED

AND

MEANS OF TEACHING.

Geology and Palaeontology General and	
Specially of N. S.....	Pro. Museum.
Mining, Engineering.....	Mines Department.
Surveying.....	Crown Lands Department.
Chemistry.....	Colleges.
Mineralogy.....	Colleges.
do	Prov. Museum.
Metallurgy.....	Metallurgist
Mathematics.....	Colleges.
do	Academies.
Natural History.....	Colleges.
do	Academies.
Languages, Ancient and Modern.....	Colleges
do do	Academies
A Board of Examiners.	

REPORT

OF THE

DEPARTMENT OF MINES,

BY THE

COMMISSIONER OF PUBLIC WORKS AND MINES

FOR THE

PROVINCE OF NOVA SCOTIA,

FOR THE YEAR 1872.



HALIFAX, N. S.:

PRINTED BY THE CITIZEN PUBLISHING COMPANY.

1873.

CONTENTS.

	Page.
Report Commissioner of Public Works and Mines.....	iii
Report Inspector of Mines.....	1
“ General Summary.....	3
“ Abstract, Coal Sales.....	4
“ Coal Mines of Cumberland.....	5
“ “ “ Pictou.....	7
“ “ “ Cape Breton.....	12
“ Gold Districts.....	22
Treatment of Tailings.....	34
“ Iron Mines.....	36
“ Accidents.....	38
Dynamite.....	50
Table of Pit Tubs.....	52
Coal Exports from Great Britain.....	53
“ “ “ United States.....	53
“ “ “ (Custom House Reports) Nova Scotia.....	54
“ Quarterly Returns—Table of Sales.....	56
“ Table of Labor.....	58
Gold, Monthly Abstract.....	60
“ Yearly “ 	72
“ District Returns.....	73
Financial Statement.....	76
Report Curator of Museum.....	83

REPORT.

MINES DEPARTMENT,

Halifax, February 26th, 1873. }

SIR,—I have the honor to submit for the information of His Honor the Lieutenant Governor, the Annual Report for the year 1872, respecting the Mines of this Province.

It is gratifying to be able to report a large increase in the coal trade during the past year, resulting from the reduction of duty on coal in the United States, and the advance in price of iron and coal in Great Britain. There has also been an increased demand at Halifax for coal for steam ships, arising from the same causes. In several markets hitherto altogether supplied from Great Britain, Nova Scotia coal now sells readily at remunerative prices.

In the year 1871, 595,418 tons of coal were sold, in the year 1872, 785,914, being an increase of 189,496 tons, the details of which are shown by the usual statistical tables hereto annexed, to which attention is invited.

From the nature of the returns hereto made to the Department by the Coal Mining Companies, it is not possible to ascertain the countries to which our coal is exported, or the respective quantities shipped to each, but in future they will furnish this desirable information.

Explorations for coal have been made in the Spring Hill region, Cumberland County, by the Exploration Company, Messrs. McFarlane, Livesey and others, proving beyond doubt, that on completion of the projected railways, it

will become one of the most important mining districts in the Province.

Although the yield of gold per ton of quartz crushed, and the average earning per man employed in gold mining are larger than that of last year, yet there has been a decrease in the aggregate amount of gold obtained, in the number of men employed, and in the number of mines worked this year. This decrease is principally owing to the high price and scarcity of labor, and to other causes mentioned in the Report of the Inspector of Mines, which it is unnecessary here to recapitulate. Gold mining during the past year has been chiefly confined to mines previously opened. A mine was opened at Harrigan Cove, and another at Shear's Point, both in the eastern part of Halifax County. The first mentioned is owned by Mr. Samuel Smith, who has placed a crusher of eight stamps and other appliances on the ground, and is working his mine vigorously. From the appearance of many lodes exposed by a large amount of cross cutting and the returns from the crusher since December, it is expected that it will prove remunerative. The mine at Shear's Point has not been so fully prospected, but some quartz from it crushed at Mr. Smith's mill has yielded a good return. These are the only gold mines opened in new districts during the year.

The same causes that have given an impetus to the coal trade have brought our iron ores into notice. Numerous licenses with the object of searching for iron ore have been issued, and extensive explorations have been made, in some instances successfully.

In licenses to search and work issued by this department, the right is granted to search for, and work all mines and minerals other than gold; in the leases, there is only granted the right to mine for one stated mineral. In some of the areas granted under lease to mine for coal

is found an argillaceous iron ore, which ore the holders of the coal mining lease have no right to mine, and for which right applications have been made by others than the coal mining lessees, if it should be considered advisable to lease such situated iron mines, there will be some legislation required to secure the interests of the present lessees and to prevent collision.

From the circumstances that the above-named ores are found in beds conformably interstratified with the beds of coal I think it would be advisable not to grant separate leases, but to give the right to mine the iron to the holders of the lease to mine for coal on such terms and conditions as may seem necessary.

The act entitled "An Act to Consolidate the Statutes relating to Mines and Minerals," passed the fourteenth day of June, 1869, contains many ambiguities and inconsistencies, and demands amendment in many particulars. This act and the acts passed in amendment being the whole law in force in this Province relative to Mines and Minerals, are almost wholly confined to the management of mining titles, returns and collection of rents and royalties. An act is urgently required similar to that enacted in Great Britain in 1872 for securing the skilful and economic working of mines, and making it imperative that all practicable precaution be adopted to prevent accident to the employees.

It was discovered through surveys made for railways and other purposes that the maps of Cumberland County, used in connection with the Mines Department, were incorrect. A large tract of country between Spring Hill and the Joggin's is leased or covered by licenses to search and work, the boundary lines being based on three or four starting points, and to prevent confusion and future dispute, it was deemed proper that these points should be correctly fixed. Professor Hind, at the instance of the Government, undertook to

have the necessary surveys made, and had them completed by John Oram, Esq., Professor of Mathematics of King's College. Professor Hind's Report has been printed. A correct map of the locality has been made, showing the required points on which will be marked the areas under lease or license. There is now a difficulty in ascertaining the boundaries of mining areas, in consequence of the courses in all surveys having been given according to the magnetic meridian. True meridian lines have never been set up in this Province. All surveys of Crown Lands and Mining areas have been made by the magnet, and consequently when a corner mark is destroyed or lost, it is almost impossible to find the exact point again. Illustrative of this, Professor Hind states that he found a tree marked as the starting point for the survey of the General Mining Association's area at Spring Hill, but at the corners several different bounds were shown made by different surveyors, who had attempted to run the lines of the area beginning at this tree. As this area has been made the basis for the description of the surrounding ones, this variation of courses may cause difficulty. I would suggest that true meridian base lines be set up, at least, near the principal mining centres, so that surveyors can test the variation of their instruments on making surveys. This should be followed by a survey of the lines of all areas under license to work or lease, as soon as convenient, and the courses taken on the basis of the true meridian. Such a survey is difficult even now, but it will become more difficult to accomplish, the longer it is left undone.

The increased activity in the coal trade created a corresponding demand for labor, which this Province could not supply, and in consequence wages became higher, and ships engaged in exporting coal were unduly detained. Unless a sufficiency of miners be obtained the opportunities now offered for securing permanently the markets lately opened to us, will be greatly lessened.

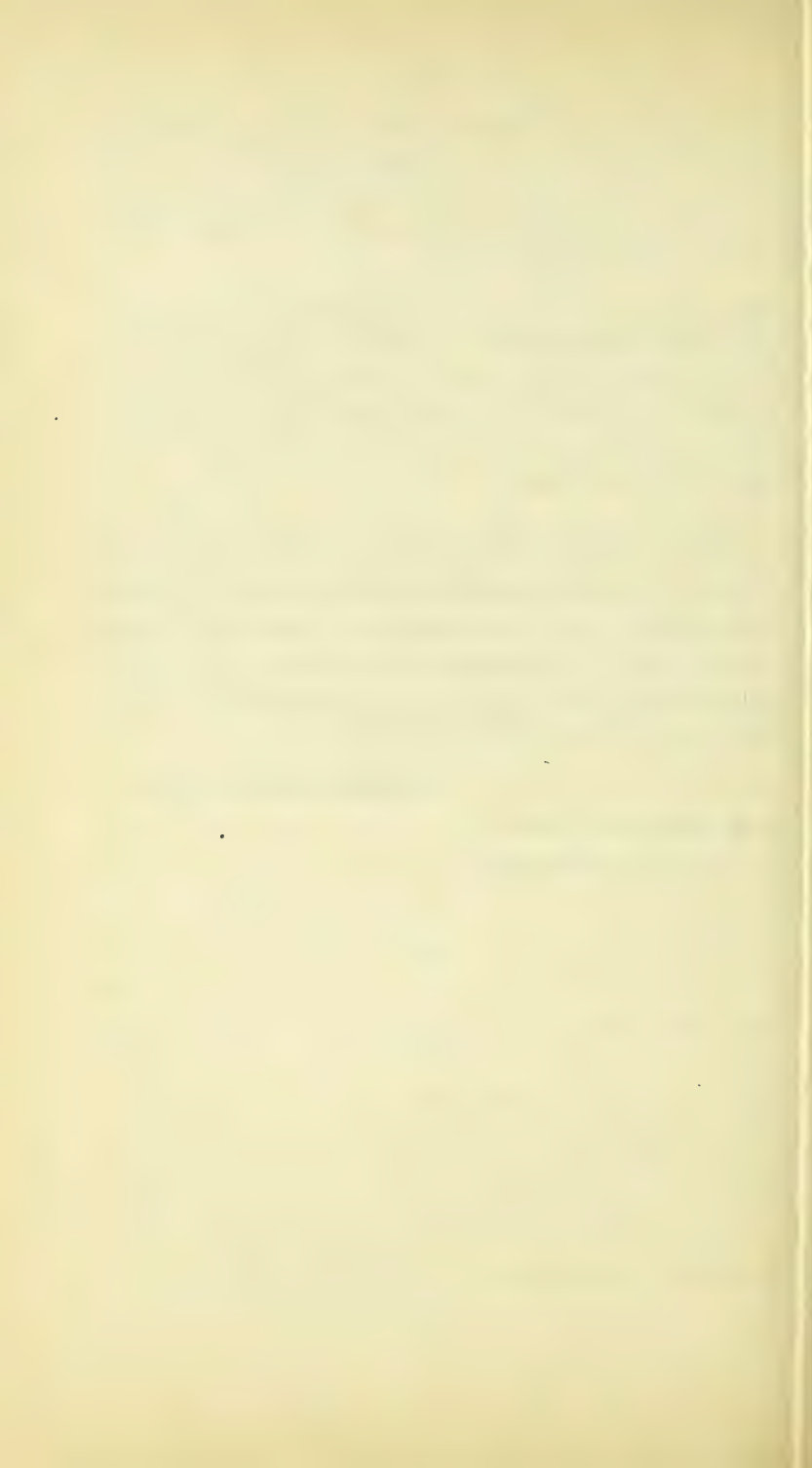
The usual report of the Inspector of Mines is subjoined, and contains besides the customary information on the general condition of the Gold and Coal Mines, several suggestions by him, deemed worthy of serious consideration, to which I beg to call attention.

Dr. Honeyman continues to make additions to the geological and mineralogical collections in the Provincial Museum. Under his able management this institution is becoming more useful and interesting. His report appended gives a detailed description of these additions and other interesting information.

I cannot close this report without paying a tribute of respect to the memory of my predecessor, the late Honorable William Garvie, a gentleman who was as much admired for his talents and accomplishments, as he was esteemed for his moral worth. His death has deprived us of one of our most promising public men, and his premature decease is deeply regretted by all Nova Scotians.

DANIEL MACDONALD.

To the HON. W. B. VAIL,
Provincial Secretary.



REPORT

ON THE

INSPECTION OF MINES,

UNDER LEASE FROM THE CROWN

IN THE

Province of Nova Scotia,

FOR THE YEAR ENDED 31ST DECEMBER, 1872,—BY HENRY S.
POOLE, Esq., F. G. S.; ASSOCIATE OF THE
ROYAL SCHOOL OF MINES.

HALIFAX, N.S., February 15th, 1873.

SIR,—I have the honor to transmit, as Inspector of Mines, to which position I was appointed in August last, the accompanying report on the mines of the Province for the past year; and do so with more pleasure at a time, which promises to be the beginning of a new era in the history of the coal trade.

The mining record for the last six years tells of one unbroken series of efforts, on the part of the mine owners to contend against low prices and an irregular demand consequent upon the close competition which has hitherto existed for the trade of a limited market.

On looking over the yearly reports from the Directors of the different Corporations, it may be seen that during that period not a single Concern has paid a fair dividend on the capital expended. While many have merely paid working expenses, some have been even worked at a considerable loss. The endeavor having been either to force a trade, or to keep the mines open, until the better times, yearly expected, would come.

The increased demand has come, but not altogether from the quarter expected. Ever since the trade languished, on the abrogation of the reciprocity treaty with the United States, the operators have looked for a reduction of the heavy duty, which was then imposed on all bituminous coal imported into that country, as the means of restoring to them a profitable market for their coal. To some extent their hopes from this source have been realized. The United States' new tariff bill, which came into force August 1st, 1872, declares that the duty shall be:—

“On all bituminous coal and shale, seventy-five cents per ton of twenty-eight bushels, 80 lbs. to the bushel.

“On all slack coal or culm, such as will pass through a half inch screen, forty cents per ton, 80 lbs. to the bushel.”

Yet, the quantity shipped during the year to the United States, has not been as much as might have been expected from a review of the increase that has yearly taken place, notwithstanding the late prohibitory duty.

The unlimited market, which has been so unexpectedly opened to Nova Scotia, is in a great measure due to the state of the trade in Great Britain. While the British exports for the year 1872 have risen from 12,747,989 tons to 13,211,961 tons or by 4 per cent. ; their value has increased from £6,246,133 to £10,443,920 or by more than 66 per cent. This rise in value has permitted our shippers to compete in markets on this continent from which, by low prices, they were hitherto excluded, and it has shewn that the prosperity of our trade is not altogether dependent, as was generally supposed, on the markets of the Republic.

Yet while it is satisfactory to know this, it should not be forgotten, that this country, is as much interested in the total withdrawal of the American import duty, as are the citizens of New England, and that we look to them for our principal market, as much as they naturally do to us, for their supply of bituminous coal.

When speculating on the probable trade of the coming season, it is well to bear in mind, that, with the increased demand in the

Autumn came an increase in the rates of freight ; and the profits that otherwise might reasonably have been expected to accrue to the coal owners, were absorbed in the maintenance of the shipping, that for weeks lay idly waiting their turn at the coal ports. The output from the mines falling far short of the demand, labor consequently was at a premium and wages rose 20 to 25 per cent. above the rates of the year before. In all probability, a further advance will be asked for next summer, when competition bidding for all the available labor prices may be forced to a height that will make mining no more profitable than it has been heretofore.

Wages are now such, at some of the mines, that steady men have earned over \$80 per month for three months in succession ; and all that they can reasonably ask, besides, is to have constant work the whole year through ; the present rate of wages being the maximum that the prosperity of the trade can afford to pay. Anticipations are entertained that the business of next year will double that of the present, but there is really no ground on which such a calculation can be possibly based. The utmost capability of all the mines working under the most favorable circumstances is, I believe, not in excess of 1,100,000 tons ; unless indeed a large importation of skilled labor can be speedily effected.

GENERAL SUMMARY OF THE RETURNS OF THE MINERAL PRODUCE
OF NOVA SCOTIA, RECEIVED BY THE DEPARTMENT OF MINES
FOR 1872.

Number of Mines.	Minerals.	Quantities.	Value.
25	Coal.....tons	880,950	\$1,409,520
30	Gold (17,173 tons quartz,) oz.	15,079	278,961
2	Iron.....tons	6,000?	
1	Barytes: "	260	2080
1	Manganese..... "	40	1400
	Plaster..... "	99,470	89,523
	Fire clay..... "	527	

COAL Sold in the Province during the year Ended December 31st 1872.

COUNTY.	ROUND. Tons.	SLACK. Tons.	Nova Scotia Proper.		
			Total Round. Tons.	Total Slack. Tons.	Total. Tons.
Cumberland.....	13,272	881			
Pictou.....	340,142 $\frac{1}{4}$	48,275 $\frac{1}{4}$	353,414 $\frac{1}{4}$	49,156 $\frac{1}{4}$	402,570 $\frac{1}{2}$
				Cape Breton.	
Cape Breton.....	360,036	20,237 $\frac{1}{2}$			
Inverness.....	2,879	191	362,915	20,428 $\frac{1}{2}$	383,343 $\frac{1}{2}$
	716,329 $\frac{1}{4}$	69,584 $\frac{3}{4}$	716,320 $\frac{1}{4}$	69,584 $\frac{3}{4}$	785,914

COAL MINES.

CUMBERLAND COUNTY.

The increased demand for coal, which in the Autumn gave opportunity for the display of much energy in the other coal mining counties, has not been attended by a similar result in Cumberland.

Although much attention has been drawn to Spring Hill by the opportunities for carrying on a profitable business, which the opening of the Intercolonial Railroad from Truro to Amherst afforded, as yet no active preparations have been commenced for mining in that most promising coal field.

On the areas owned by Mr. Livesey, a persistent search by boring has been conducted, but up to the present time no seam of much value has been found. The prospectors have, however, succeeded in tracing the main seam a quarter of a mile further to the westward, on the General Mining Association's property, and consequently their hopes of proving the further extension of the workable bed to the westward, have been considerably raised. Much difficulty is met with, in proving the extent of the field, on account of the great depth of the superficial deposits, and the great expense attendant on sinking trial pits.

THE JOGGINS.

The Joggins colliery has been further developed and the facilities for an increased output prepared. During the year 12,291 tons were sold, an increase of 1877 tons over the preceding year's operations. The new slope has been continued to a depth of 690 feet, and the low levels from it open a new winning of 315 feet to the deep of the present water bord. At the eastern end of the workings, a mile and a quarter from the shaft, the old system of bord and

pillar has been abandoned, and a long-wall system with 40 feet faces of work has been introduced. Both divisions of the seam are worked and the intervening parting of fireclay which there is not so thick as to the westward, is thrown back into the waste. The change in the system of working has been attended by the replacing of the skids hitherto used, by tubs of moderate capacity. On the surface, preparations have also been made for an increased business. The wharf has been extended 100 feet and blocks for 200 feet have been built at right angles with the main wharf which afford additional protection to the shipping. An expenditure is returned as follows :—

Slope.....	\$2809
Levels.....	2000
Surface Works.....	2802
Houses.....	200
	<hr/>
	\$7811

MACCAN.

The returns from this mine state that 118 tons have been raised during the year and that the sum of \$15.00 has been expended on levels.

SCOTIA.

At this colliery mining has been on even a more reduced scale than in former years. The quantity of coal mined was 844 tons and an expenditure is shown on

Adits and Levels.....	\$287.40
-----------------------	----------

SPRING HILL.

The Spring Hill Mining Company has been formed to work the Macfarlane areas. It is expected that during the ensuing year works of a permanent character will be established. For the

present, a slope 115 feet deep worked by a horse gin yields the coal that is supplied to meet the local demand. 1000 tons have been sold. The returns show an expenditure on—

Levels.....	\$201.13
Surface Works.....	365.00
Houses.....	500.00
Machinery.....	30.00
	<hr/>
	\$1096.13

On the Black areas \$446.60 have been spent on prospecting.

A branch from the Intercolonial Railway about four and a quarter miles in length is now being built, which will, when complete, put the mines in communication with the markets of the numerous towns and villages on the line of the railroad from Truro to St. John.

PICTOU COUNTY.

The four active collieries in the county, were worked with vigor, up to the close of navigation, and helped in a great degree, to swell the increased total output of the country. They are now making further preparations to meet the expected greater demand of the coming season.

In the eastern and western sections of this coal field, prospecting has been conducted with renewed energy, but has as yet met with, but indifferent success. From the

ALBION MINES

98,865 tons were sold, an increase of 21,732 tons. At the Foord Pit, the only pit now being worked in the main seam, the levels to the northwest have been much extended and room made for an increased number of men. To the rise of the workings and

below a heavy barrier of coal left to dam back the water lying in the old workings, an air shaft nine feet six inches square is in course of being sunk. At the mouth of this air shaft a Guibal ventilating fan 30 feet in diameter will be erected, and also a steam engine by the aid of which the shaft now 345 feet deep will be continued 270 feet further; at which depth it is expected to reach the coal.

All the old workings to the westward in this seam are now shut off, and as heavy after damp finds its way through the cracks of the measures, and falls along the crop to the surface, in the neighborhood of the Forster Pit, in all probability fire still smoulders over an extensive portion of the workings in that district.

By some means unexplained, the after-damp suddenly found its way into the old workings of the deep seam, and in such volume, that a large district had to be walled off. In the deep seam operations have not been very extensive, but preparations have been made to greatly increase the capabilities of the Cage Pit, by extending the incline and driving levels.

Coke continues to be made of the slack from the main seam, and meets with a ready sale at remunerative prices. The returns show an expenditure as follows:—

Shaft.....	\$4669.66
Machinery.....	6394.15
Houses.....,	3208.72
	<hr/>
	\$14,272.53

ACADIA.

The regularity that in previous years characterized the working of this colliery, is again observable in this year's returns. The quantity of coal sold, 123,063 tons, exceeds the sales of the previous year, 119,056 tons, and is the largest output from any one mine in the country. The system previously pursued has been continued. The slope, having been extended 370 feet, has now a total length of 1190 feet. Another set of levels are in course of

being driven to develop the new lift. In the upper lifts the levels have been driven to the boundary, and the pillars robbed to such an extent, that the roof has crushed in over a large area of the workings. From the experience gained by working the pillars, it is expected that in future operations of a similar character, a much larger proportion of coal will be won than hitherto; especially when the robbing is conducted in a regular manner.

There has been erected, during the year, a new set of three boilers made of $\frac{3}{8}$ plate, thirty feet long and 34 inches in diameter. Also, a force pump of six in. diameter and 7 ft. stroke to replace, one having only half its capacity. An expenditure is returned as follows:—

Machinery.....	\$7852.19
Surface Works.....	540.50
Houses.....	218.89
	<hr/>
	\$8611.58

INTERCOLONIAL.

Sold 105,545 tons; an increase of 54,058 tons over the total quantity mined during the previous year. At this colliery, the slopes have been continued to a depth of 1440 feet, developing a new lift of 451 feet, and the mine put in an efficient state for a further extension of its capacity. The driving of the slope took 47 days. A shaft 342 feet deep, in size 14 feet by 6 feet, was sunk in 132 days. It is, for the present, to be used as a downcast for the air. A stone drift has been driven through the trouble, an upthrow of twenty-five feet, that at present bounds the workings to the east, and the extension of the levels in that direction continued. On the western side of the slopes, the levels have been driven to the boundary, and a return air course has been cut up the side of the barrier rib.

A branch road two and three quarter miles long (to connect the colliery with the provincial railroad) has been constructed.

The returns show the following expenditure on

Shafts.....	\$ 5942.69
Surface Works.....	443.16
Houses.....	2930.06
Levels.....	1433.26
Machinery.....	1795.27
Railroad.....	20678.76
	<hr/>
	\$33223.20

NOVA SCOTIA

Sold 60,590 tons; an increase of 48,072 tons. By perfecting the arrangements previously made, without a much further expenditure of capital, this colliery was also enabled to largely increase its business, and with the other establishments on the Acadia seam, find a ready sale for its product in the general market. The construction account is returned as follows :—

Houses.....	\$3525.00
Surface Works.....	1787.00
	<hr/>
	\$5312.00

VALE.

This colliery has been planted on the McBean areas, to work the deep or 8 foot seam. Two slopes now 160 feet deep are being driven on the inclination of the seam, an angle of 30 degrees. The main slope is 16 feet wide, and the travelling way 8 feet wide. Strike of the seam N. 58° E. Mag. A pair of winding engines 12 inch cylinder and 18 inch stroke, built by the Acadia Foundry, New Glasgow, have been erected. Three plain cylindrical egg-ended boilers, 30 feet long by 38 inches in diameter, are in position, and the flues from them lead into a stack 60 feet high, 3 feet 10 inches in diameter.

Seven double houses for workmen and the necessary shops and offices are already built.

Preparations are now being made to construct a railroad, about 6 miles in length, to connect with the provincial road at New Glasgow. The expenditure stated in the returns, is as follows:—

Slope.....	\$3568.00
Surface Works.....	4208.75
Machinery.....	4437.00
Houses.....	4078.00
Prospecting.....	66.12
	<hr/>
	\$16,357.87

On the MITCHELL and BARTON area, an adit has been driven through the measures about 300 feet, on to the extension of the same seam now being opened at the Vale colliery. The workings are as yet very limited, and the extraction small. The seam on this area is found to be 14 feet thick. The returns show an expenditure on

Adits.....	\$249
Surface Works.....	135
Prospecting.....	17
	<hr/>
	\$401

The CROWN COAL, BRICK AND POTTERY COMPANY

have made no returns for the year. Their operations must, however, have been very small, and it is understood were chiefly in the fire-clay. The quantity of fire-clay shipped, is said to have been 40 tons to Montreal, and 29 tons to Halifax.

The Pictou Mining Company expended \$453.17 on prospecting their area.

CAPE BRETON.

The collieries in this Island experiencing equally with those of Pictou County, the effect of the increased demand for their product were, during the later part of the season, worked to the utmost of their restricted capacity. Their capacity was restricted, not by the want of facilities for extraction or means of transportation from the pits to the shipping wharves, but by the scarcity of manual labor at their command. Skilled workmen were not to be had, but of ordinary labor, except in the height of the season, there was sufficient.

This question of labor, will, in all probability, be the most serious of all that will engage the attention of agents anxious to profit by the expected increased trade of the present year.

In the County of Inverness, the

CHIMNEY CORNER

Colliery was alone worked. The shipments from which still remain small, through slightly in excess of the previous year. In the mine, the lowest level has been extended to a distance of 800 feet, and faces of work have been carried from it to the full rise, each about 30 feet in length, succeeding one another at a distance of 10 feet. One of Cameron's special steam pumps, No. 6, keeps the mine free from water.

It is proposed to greatly extend the breakwater, and form within the cove a shipping basin to afford greater protection for vessels against the prevailing northerly winds of Autumn. The expenditure on surface works was \$50.00; and on levels, \$150.00.

SYDNEY MINES.

102,691 tons sold. A decrease of 3,203 tons. This slight decrease was occasioned by the heavy snow storms in December blocking the railway and retarding the shipments. And had it not been

for the want of men the shipments would have been largely in excess.

The workings were conducted in the same systematic manner, employed for many years. More attention, however, was paid to the pillar working which was carried on upon an increased scale.

At the new winning at Loyd's Cove the sinking of the pumping shaft was continued to a depth of 266 feet when a feeder of salt water, 160 gallons per minute, was struck. The sinking was then discontinued, and the lower 32 fathoms of the shaft lined with cast iron tubing weighing 162 tons.

The complete sinking set of 20-inch pumps, with spears, ground spears, crabs, sheaves, &c., were erected, and 29 fathoms of 3-inch plank brattice with oak buntions, guides, &c., were put in and other arrangements completed to combat with the feeder and continue the sinking. The staple shaft which stood at 140 feet was continued to a depth of 280 feet, and 25 fathoms of its depth were cased with cast-iron tubing weighing 72 tons. In his last report Mr. Brown states that the sinking was progressing satisfactorily, and although the feeder had more than doubled in volume hopes were entertained that the water-bearing strata would shortly be pierced, and the feeder tubbed back. The returns give the following expenditure :

Shafts.....	\$14,541.21
Surface Works.....	518.67
Machinery.....	902.68
Houses.....	2283.84
	<hr/>
	\$18,246.40

VICTORIA.

19,222 tons sold. The levels in the mine have been extended to the West and the lower one has reached a distance of 22 chains.

‡ The accommodation for workmen has been increased by the

building of several blocks of double houses. In the return the expenditure is thus shown:

Levels.....	\$9546.11
Surface Works.....	55.50
Machinery.....	158.13
Houses.....	5973.22
	<hr/>
	\$15,732.96

LINGAN.

38,404 tons sold. An output largely in excess of late shipments.

At the Barrasois the slopes are kept free from water but no means of shipment or transportation have yet been provided. The level under the sea has been extended about 4 chains. An expenditure is returned as follows :

Levels.....	\$2,343.72
Surface Works.....	528.60
Dredging.....	3,621.57
	<hr/>
	\$6,493.79

GARDINER.

The crop workings have been abandoned, and a shaft 12 feet, by 9 feet is in course of being sunk, which should it is expected reach the coal at a depth of 200 feet. The upper 15 feet of the shaft have wooden walling, below, the measures are sound and require at present no lining. The position of the shaft is convenient for shipping by the International Railroad, to Sydney Harbor.

Preparations are being made to erect a powerful winding engine, build workmen's houses, shops, &c. The expenditure is stated to be :

Shafts.....	\$9,833
Houses.....	7,016
Machinery.....	895
Surface Works.....	343
Railway branch.....	855
	<hr/>
	\$18,942

RESERVE.

This colliery is now fully equipped to work the crop coal of the Phelan seam. Two slopes, 10 feet wide, have been driven to a depth of 810 feet and levels won out on either side. A single horizontal engine, 22 inch cylinder, 3 feet 8 inch stroke, geared one to three with the following shaft, on which drums 5 feet 8 inches in diameter, are driven by friction gearing. Five boilers 30 feet long, 3 feet in diameter, of half-inch plates, well fitted, each with two safety valves, water gauges, &c., erected in an adjoining building, supply steam for the hoisting engine, machine shop, and for the steam pump at the bottom of the mine. The flues from the boilers lead into a stack 53 feet high. A more than usual amount of attention has been given to the dwellings of the workmen; each is supplied with an out-house, a necessary adjunct for the comfort of the people, but one, unfortunately, not always so considered by the builders of mining villages. Neat picket fences surround the plots of ground set aside as gardens for each household.

The narrow guage railroad connecting the Lorway, Emery and Schooner Pond Mines with this colliery, and the shipping pier at Sydney is equipped with three of Fairlie's double engines and 200 wagons. Each wagon, 12 feet 6 inches long by 7 feet wide, is fitted with side doors and pitched floor, and has a capacity when heaped of 4 tons.

The following analysis was made by the Manhattan Gas Light Company, New York:

Charge, 2240 lbs. Time 3 h. 50 m.

Maximum yield per ton.....	9950 ft.
Illuminating power at 9500 ft.....	13.17 candles.
Coke, per ton, 38 bushels.....	1520 lbs.
Gas purified by one bushel lime.....	2380 ft.

	New York.	London.
Volatile matter.....	34.50	36.26
Fixed Carbon.....	59.50	Coke 62.74
Ash.....	6.00	Water 1.00
	<hr/> 100.00	<hr/> 100.00

	London.
Carbon.....	77.41
Hydrogen.....	5.47
Oxygen and Nitrogen.....	9.30
Sulphur.....	2.47
Water.....	1.00
Ash.....	4.35
	<hr/>
	100.00

In the returns the expenditure is given :—

Levels.....	\$9767.60
Houses.....	6973.65
Surface Works.....	6916.49
Machinery.....	1590.85
Prospecting.....	96.40
	<hr/>
	\$25,344.99

LORWAY.

A shaft 66 feet deep, 11 feet by 9 feet, and divided by a brattice, has been sunk to work the crop coal until the pair of pits now in course of sinking have developed the seam. A single horizontal engine 14 inch cylinder two foot stroke, geared one to three with drums five and a half feet in diameter is used for hoisting. Two boilers of the same construction as those at the Reserve supply the steam. The pit frame is 45 feet high and the pulleys $7\frac{1}{2}$ feet in diameter.

The sinking of the permanent pits gets on but slowly as there is a great deal of water to contend against. The pumping shaft is now down 110 feet. Two portable engines of 10 and 16 horse power are in use for hoisting and supplying steam for two steam pumps 7 inch cylinder and 12 inch stroke.

The construction account is returned as follows :—

Shafts.....	\$14,459.90
Levels.....	5145.52
Surface Works.....	8159.80
Machinery.....	11,347.17
Houses.....	17,688.02
Prospecting.....	794.45
	<hr/>
	\$57,594.86

INTERNATIONAL.

Operations were suspended at this colliery at the close of the previous year and were not resumed until September. The business in consequence was much below that of the preceding year. An additional engine has been connected with the single horizontal engine hitherto used for hoisting, but in other respects the arrangements have not been changed. The preparations made in the previous year to increase and regulate the supply of fresh air passing through the workings have not been carried out; and should it be considered desirable to work the mine extensively and uninterruptedly during the ensuing summer a furnace or fan should be forthwith built.

The following is an analysis of the coal made by the Manhattan Gas Light Company, New York, January 10th, 1871.

Maximum yield per ton.....	10,106 feet.
Illuminating power at 9500 feet.....	1703 candles.
Coke per ton.....	38 bushels.
Coke per ton.....	1440 lbs.
Gas purified by one bushel of lime.....	2314 feet.
Ash in coal.....	5.0 per cent.
Volatile matter.....	38.5 “
Fixed Carbon.....	56.5 “
	<hr/>
	100.0

The expenditure is returned as follows:—

Shaft.....	\$340.00
Surface Works.....	177.00
Machinery.....	3140.00
Levels.....	885.47
	<hr/>
	\$4542.47

GLACE BAY,

30,715 tons sold; a decrease from last year of 8,800 tons.

Hampered by the want of labor when the demand sprang up, this colliery was unable to increase its output beyond the limited

quantity stated. No changes in the method of working or in the general arrangements at the Hub have to be noticed.

The crop workings on the Harbor seam having extended so far from the Little Pit, it has been thought advisable to prepare for a new winning 500 yards to the deep, and the sinking of two shafts about 100 feet apart has been begun. The pumping shaft, 10 feet in diameter, is walled with stone three and a half feet thick to a depth of 19 feet. The "Sterling" to be used as a hoisting shaft is similarly walled and is $10\frac{1}{2}$ feet by 11 feet. The coal is expected to be struck at a depth of 230 feet. The Hub seam is so easily wrought that the average quantity of coal cut per man per day is 6.5 cubic yards. An average unusually high, and, I believe, not surpassed by the cutters in the thick seams of Pictou County. The expenditure stated in the returns is as follows:

Shafts	\$3207.50
Levels	225.66
Surface Works.....	272.75
Machinery.....	819.17
Houses	1260.71
Railroad	529.00
Piers.....	703.38
	<hr/>
	7018.17

CALEDONIA.

44,186 tons sold; an increase of 19,531 tons.

Shipping from this colliery was steadily pursued for nearly the whole season, and although the daily yield was small the sum total amounted to considerably more than in any previous year. In the mine, the levels have been extended and more rooms broken off from them. A headway has been driven to the crop which is to be used as an intake for the air during cold weather, so as to relieve the pumping shaft and keep it free from ice. The lodgment has been enlarged, and has now a capacity of three or four day's water.

The pit-tubs have been fitted with end doors to save breakage of the coal.

At Port Caledonia the water has been deepened by dredging, and vessels drawing 17 feet have been loaded.

The returns show an expenditure of \$1,479 on levels, and \$1,500 on houses.

CLYDE.

2,606 tons sold.—Late in the Summer arrangements were made by which the product of this colliery might be shipped at Port Caledonia. A railway about half a mile in length was constructed and a shipping berth erected. The establishment, the returns stated, was put in order by an expenditure on

Shafts.....	\$204.50
Levels.....	128.00
Surface Works.....	1051.50
Machinery	550.00
Railway	8020.50
	<hr/>
	\$9954.50

SCHOONER POND.

This colliery, connected with Sydney Harbor by a branch of the Glasgow and Cape Breton Railway, is in course of development.

The following are analyses of the coal made at the Royal School of Mines, London;

Carbon.....	78.10.	Volatile matter....	35.43
Hydrogen.....	5.48.	Coke.....	61.90
Oxygen, &c }	7.81.	Water	2.67
Nitrogen }			<hr/>
Sulphur	2.49.		100.00
Water.....	2.67.		
Ash.....	3.45.		
	<hr/>		
	100.00		

A slope 10 feet wide with side slopes 6 feet wide are being driven to the deep. Nine blocks of workmen's houses, the necessary workshops, offices, and requisite hoisting and pumping machinery are being built and erected at an expenditure for the year, the returns state on

Slopes.....	\$7,615.60
Surface Works.....	1,859.72
Houses	22,946.14
Machinery	4,112.91
	<hr/>
	\$36,534.37

BLOCKHOUSE.

42,748 tons sold.—Active operations were resumed during the Summer at this mine, and a fair amount of business transacted. The operations were of the ordinary character with this important addition that pillar working, in two districts of the pit, was commenced and so far conducted with success. As a large area of the seam now stands in pillars the immediate further extension of this class of work should be seriously considered.

The shipping wharf has been strengthened at an expense of \$3,000.

GOWRIE.

46,602 tons sold ; an increase of 4,171 tons.

A new shaft has been sunk three quarters of a mile from the Odiorne pit, on to the extension of the North-west levels. It is to be used as a hoisting shaft and is 12 feet in diameter, lined with wooden cribbing to the depth of 24 feet.

Before sinking was commenced a borehole to carry of the water was put down by the aid of a portable engine and a manilla rope used in place of the ordinary hand-rods. The Breakwater has been further extended and is now 1,430 feet in length. The total cost

of the structure, it is stated, has been \$90,000. The construction account has been returned as follows :

Shaft	\$2,610
Boring	450
Levels.....	270
Surface Works.....	235
Machinery.....	450
Houses.....	350
Breakwater.....,	2,020
	<hr/>
	6,385

SOUTH HEAD.

1859 tons sold. The resumption of work in the mine was undertaken late in the year, but the temporary character of the loading wharf preventing shipments being made, necessitated a further suspension.

GOLD MINES.

Since the last report was written a complete change has taken place in the system of working the gold mines, and with the change there has been a great falling off in the number of men engaged, and a consequent decrease in the yield of gold. The change referred to, is the almost total discontinuance from operating by companies and the introduction of the system of working the mines by tribute.

Two or more practical working miners agree among themselves to take a mine, often one that an agent for a Company has failed to work at a profit, for a term of six months or a year, with the understanding that they pay to the owners a percentage of the value of the gold extracted. They then venture their time and money in the speculation. Trusting by honesty, economy and by faithful working not only to make fair day's wages but also earn a return on their capital, time, adventured.

The "tribute system" has become with but one or two exceptions general in all the districts, and although it is attended by some disadvantages, it promises to lead to excellent results.

Already it is shown that some of the leads abandoned by Companies can, in the hands of tributers working even under many difficulties, be wrought with profit and advantage.

The great objection to tributing, as now conducted, is the desultory method it introduces. The backs of the leads are stripped and the trenches thus made become reservoirs for water. No more timber than is absolutely necessary for the

immediate safety of the mine is as a rule used, and in districts where the country rock is fissile, a crushing in of the walls sooner or later takes place.

Much has been written on the general want of method attending Gold mining in Nova Scotia and sweeping condemnations of the management and want of skill shown while working the mines have been published. Much doubtless most justly, and yet, somewhat hasty comparisons would seem to have been drawn between the wide and comparatively easily wrought leads of other districts and the thin leads of this Province enclosed in hard and tough country rocks.

The great expense attendant on the mining of the quartz has had as much if not more to do with the failures that have hitherto, with but few exceptions followed all ventures in the gold fields.

No manner of doubt, however, can be entertained that the treatment of the quartz after extraction is still crude and imperfect, and the results obtained in our mills are far behind those of other countries.

Professor Hind in his late report on the Renfrew, Oldham and Waverley Districts has ably treated on these causes of failure, and has shown the practise of Colorado, California and Australia. His report should be read, and read with care, by all who are interested in the gold mines. I wish to add merely as a foot-note to his remarks that the invariable experience on the Pacific slope has been, "that the best mill men always have been good mechanics."

In the methods of mining, the improvements that have taken place in other parts of the world, as for example in drilling and blasting have not been here yet applied. Three men may still be seen laboriously preparing a hole for an ordinary blast, using at least an inch and a quarter drill;

while no stronger blasting material than black powder is consumed. Elsewhere small holes, single hand drills, and a powerful explosive are coming into all but general use. To introduce this system here merely requires the importation of suitable material. Our miners are fully alive to the advantages to be gained by a reduction in the cost of blasting, and seconded by their wishes on the subject, I spoke to Mr. J. Stairs who kindly undertook to make the necessary enquiries.

He informs me that Dualin made in Massachusetts costs there \$1.20 per pound while Dynamite manufactured in England can be retailed here for \$0.90 per pound. The English manufacturers say that an ounce of their strongest powder is equal to one pound of the best black blasting powder. The advantage of using this material is at once apparent.

“It may be stated that the great advantage accruing from the use of Dynamite consists, not in diminishing the cost of powder as an item of expense, as in diminishing the cost of using it. The difference in the cost of powder is trifling in comparison with the difference in the cost of drilling, charging, tamping, convenience in wet work, and effectiveness of blasts.

Dynamite, as a general rule, throws rock less and breaks it more, and extends its effects much deeper than ordinary blasting powder; and those who use it soon learn not to judge of a blast by first appearances. It frequently happens that a blast which seems to have had no effect, proves to have done remarkable execution in cracking and loosening the rock and preparing the way for subsequent blasts.”

As the method of using dynamite is novel to our miners I have appended to this report an account of dynamite and the manner of its use, extracted from the circular of Messrs.

Bandmann, Neilson & Co., of San Francisco, the agents of Messrs. A. Nobel & Co. Having had personally some experience of the use of dynamite, I feel sanguine of the success it will meet with in our mines, and trust the next report will confirm my anticipations.

STORMONT.

Little attention has been given to mining in this district. The chief operations have been conducted on the lead worked by the United and Consolidated Mining Companies. The former company resumed work late in the Autumn, while the latter pursued mining steadily for several months and met with fair success. The shafts have been sunk to a depth of 121 feet and the ground on either side stoped to the boundary.

The Johnston's brook mine was, to a small extent, worked in the Spring.

WINE HARBOR.

The English company have continuously worked their property, and the yield for several months, from quartz taken from the Plough lead, was most encouraging. The shaft of the Plough lead is now 110 feet deep and underhand stoping, 13 feet wide, has been carried down on a length of 100 feet.

The same company are continuing the main tunnel of the old Eldorado company with the intention of unwatering the leads that intersect the country within a distance of 560 feet of the DesBarres lead. When it is completed, the main tunnel will have a total length of 1360 feet.

Mr. Sprague, the manager, erected a direct acting steam stamp, which unfortunately has not proved as successful as

was anticipated. He, however, hopes to make alterations which will greatly improve its efficiency.

The Phoenix Company, of Toronto, suspended operations early in the year, having developed the Eureka lead by two shafts, 118 feet apart, sunk to the depth of 100 feet and 24 feet, and by drifts to the east and west 55 feet and 26 feet respectively. They also worked the Charlotte lead which lies 29 feet to the rise of the Eureka, on which they sank a main shaft 110 feet deep and a shaft 70 feet to the east, 63 feet deep.

SHERBROOKE.

The property of the New York and Sherbrooke Company has been worked on tribute by Israel West, who, operating principally on the Harrison or South lead, employed on an average twenty-one men. The main shaft of the South lead is down 250 feet, and the east and west tunnels are driven to distances of 160 feet and 120 feet. The pumping and hoisting is done by steam power.

Mr. West prospected for many months the Hayden and Derby property, over which he has a tributing right, but met with very indifferent success until September, when he was fortunate enough to strike a lead, which promises very encouraging returns.

The Archibald lead on the Alexander property has been re-opened after abandonment for seven years. The old workings were found to consist of two shafts, eighty feet apart, sunk to depths of 45 feet and 35 feet.

The McLean or Little lead on the Wellington and Alexander properties which had remained unworked for eight years was re-opened by tributers in September. The previous operations had been conducted to a depth of 125

feet. The mining on the Wellington lead which had been continuously carried on for a number of years past was discontinued in August, when the excavations had reached a depth of 500 feet. It was found that the machinery on the ground was insufficient for working the mine profitably at that depth, and the owners not deeming it advisable for the present to supply heavier pumps and a more powerful engine the mine was allowed to fill with water. The tributers on the property then turned their attention to the Dewar lead and put a 9 inch pump in the west shaft which had previously been sunk to the depth of 140 feet. In connection with the 400 feet on the Dewar lead in the Wellington property, the tributers are working the 100 feet of the same lead in the Rochville property adjoining on the east.

The further continuation of the Dewar lead to the east is worked by other sets of tributers on the properties of "Rochester" and "Try Again" companies which had lain idle for many years. Each party work their section separately and distinctly from those of their neighbours, and each have one, if not two, sinking shafts from which the faces of work are carried along the stope to the boundaries. It is proposed, when the workings are in such a shape as to allow all the water to flow to the west shaft on the Wellington property, that the expense of pumping, which will then altogether fall on the adventurers on the Wellington, be proportionately borne by the several parties interested.

The Palmerston Company, one of the most energetic companies that hitherto have carried on mining operations in Sherbrooke, have ceased to operate. Their property has been let to tributers, who abandoning the workings on the Palmerston, Snow and Stryker leads, opened a new lead they discovered 18 feet to the south of the Snow lead. On this lead they sank two shafts, 53 feet apart, to a depth of

40 feet, and stoped the intermediate ground. From the lead, 14 inches wide, they took 78 tons of quartz which yielded 60 oz. of gold. Encouraged by such a promising return, they removed the machinery that had been in use on the Palmerston lead and applied it to the further development of the new lead.

The Meridian Company, after working the Stryker lead for the greater part of the year, suspended their operations on it, to prospect for the new lead discovered by the tributaries on the Palmerston property.

On the Cleverdon property, the British Company have been also prospecting for the continuation of the same lead.

The Hamilton Company sank a shaft 80 feet deep on a small lead 150 feet to the north of the Ferguson lead which they had previously abandoned, but finding the lead too small to pay expenses, they have suspended all work. Operations have altogether ceased on the property of the Caledonia Company.

HARRIGAN COVE.

This new district is situated about three miles to the westward of Mosher's River ferry, and about half a mile back in the woods from the main shore road. Attention was drawn some years ago to this locality by a large boulder of quartz full of sights being found on the surface. It has been prospected in a very systematic manner and a belt of numerous ledges some 20 inches wide has been exposed. From the croppings of such leads as have been stripped, many specimens have been broken which show both fine and course gold. In the Galena belt many small pockets of iron pyrites held together by threads of gold, have been found. Mr. Smith, who controls most of the areas prospected, has erected a small mill, but it had hardly been started before severe weather put a stop to all operations.

The general course of the leads is N. 68° W. Mag.

Prospecting has been also made near the road about half way between Harrigan Cove and Mosher's River.

TANGIER.

The property of the Burlington Company was, in the early part of the year, let to tributers, who worked a little on the Leary and South Lake leads, and also prospected for the Big South lead, which they proved on the property. Subsequently all work was suspended.

Operations have been resumed on the oldest location in the Province, after a suspension of seven years. Mr. Forrest, as a tributer, has been working the areas of the Tangier Mining Company, and has stoped the Little South lead 300 feet in length to a depth of 25 feet.

On Froud's property but little was done on the Hill lead while work was steadily prosecuted, though on a small scale, on the Dunbrack lead, which was opened on a length of 160 feet to a depth of 50 feet.

The Strawberry Hill Company, having bought the Forrest or Confederate property worked both together for a short time in the early part of the year; but finding the quantity of water to be drawn was so great that it required two horse gins, working night and day, to keep the mine free, they abandoned the mines until late in the Autumn, when the required pumping machinery was erected.

No other work of any moment was done during the year in this district.

MOOSELAND.

Mr. J. Irving has since June been steadily working on tribute the mines of the Humber Gold Mining Company. He has stoped along the Irving lead above the water level over a length of 180 feet, reopened the Furnace lead and sunk the shaft on it 20 feet additional, and has erected a water wheel to do the pumping at the eastern end of the Irving belt of leads.

LAWRENCETOWN.

Operations were not resumed in this district until September when some tributers took hold of the Waddelow Lead which had lain idle for three years, and satisfied with the prospects made preparations to work it steadily during the coming winter.

MONTAGU.

DeWolf & Co. have been working on a property that contains the old Fisher lead or the North lead as it is now known. This lead they opened on a length of 100 feet by three shafts to a depth of 25 feet and found it about 14 inches in thickness. They also opened the South lead by two shafts 60 feet apart, and found it composed of two leads 8 inches and 22 inches thick separated by about a foot of slate. They have erected a mill of 8 stamps close to their mines.

Some tributers in the Spring worked on the St. Patrick lead on the Montagu Company's property, but as they did not sufficiently secure the hanging wall at the bottom of the mine, where the lead flattens considerably, it crushed upon them and the men lost the fruit of their labor.

Mr. Lawson has steadily continued to work his well known mine and has sunk the main shaft to the depth of 250 feet.

His principal operations have been on the western extension of the lead; while to the east, where the lead is pinched and faulty, the workings have been of a more exploratory character. He has erected a 10 stamp mill and fitted it in a very efficient manner. The stamps weighing 550 lbs. each are run at a speed of 60 drops per minute. The auriferous pyrites, of which the mine yields a considerable quantity, is as far as possible separated by hand, to be subsequently treated. For the collection of the remainder, more intimately mixed with the quartz, and which cannot be so picked out, arrangements will shortly be made.

The Montagu Company have suspended operations.

WAVERLY.

By DeWolf & Co., mining operations have been steadily conducted on the Union lead, the working of which was resumed in the beginning of the year, when they abandoned the operations on the Brodie lead.

The American Hill Company let their property on tribute to a company of miners who have employed, altogether, some 16 men and worked continuously during the greater part of the year. The pump at present in use being unequal to command all the water made to the deep, operations were chiefly carried on by stoping the ground between the two shafts on No. 6 lead.

OLDHAM.

During the Summer months several small parties of men worked on tribute among the mines of this district. The principal operators were Messrs. Donaldson and Shaffer. The former continued working on the lead, which has principally occupied his attention of late years, and erected a vertical

boiler with engine attached, to meet the increased requirements of the mine.

The latter, Mr. Shaffer, at first operated on the Britannia lead, but having met with a fault, which a cross cut of 30 feet through country rock failed to prove, he subsequently directed his energies to the working of the McKenzie lead, in which he placed a pump, 5 inches in diameter, 22 inches stroke, and drove it by power obtained from the Napier mill 1300 feet away, by means of wooden rods suspended on trestles. The extension of the McKenzie lead was worked to a small extent by Mr. Andrews.

RENFREW.

Mining in this district has been almost altogether abandoned. The Ophir and Hartford Companies have both suspended operations. On the property of the former, Mr. McClure has worked the McLeod lead to a small extent on tribute. By other parties, the Peifer lead has been reopened after an abandonment of five years, and a water wheel erected to pump and hoist. The lead lies very flat, not greater than an angle of 60° , and the stoping is carried on at a depth of 150 feet from the surface.

MOUNT UNIACKE.

A few tributers worked in a desultory manner among the leads on the Lake side, Montreal and Uniacke properties, stripping the surface and removing patches of ground left unstopped and easily accessible. The result of their unsystematic method of working will be to render future operations on the leads worked by them to be attended by great expense for timbering and pumping. On the Uniacke property two men, it is said, took out in the work of only a few days' quartz which yielded \$800 worth of gold.

GAY'S RIVER.

The principal operations in this district have been on the areas owned by Mr. McDonald, who has driven a slope in the hill side for 270 feet, at the bottom of which, levels have been driven to the right and left for 40 and 80 feet. The conglomerate and slate have been removed by long work in places to a height of 9 feet, and the workings have been carried back from the levels toward the crop.

On the adjoining area, work was commenced in the Autumn, and a slope is in course of being driven to develop the claim in a similar manner. An 8 stamp mill has been erected.

CARIBOU.

Mining operations were conducted in this locality during the year on a more limited scale than usual.

Mr. Touquoy did not mine with as much vigor as in former years. His workings were chiefly confined to the North and South leads. On the former the west shaft was sunk 17 feet and the east 42 feet deeper, and the ground between them stoped a distance of 60 feet. From the East shaft a tunnel was driven 23 feet in length at a distance of 20 feet from the surface, and the lead there sloped to within 12 feet of the bottom of the shaft.

The South or Flat lead has been stripped in an open cutting about 100 feet in length to an average depth of 10 feet.

At the Pioneer Mine, from January to April developments were continued on the Ritchie lode which maintained its wavy horizontality within a few feet from the surface; and a space of 30 by 52

et was stoped from its eastern extension without discovering any inclination to dip. Its thickness varied from 3 to 14 inches.

On the main lode a new shaft was sunk 20 feet and fitted with a pump connected by flat rods with the driving gear in the mill. An elevated tram road from this shaft to the mill was begun, a substantial shaft house built, and much of the machinery in the mill renewed.

Operations were wholly suspended from the latter part of April until the middle of November, when the property was let on tribute to Mr. Touquoy.

During the months of November and December about 400 feet of trenches were cut in search of new and in examining already known leads, and the pump was removed from the intended main shaft to the so-called Lake shaft 160 feet further east.

On the Free Claim lead Messrs. Jennings and Wilson sank the west shaft 20 feet deeper and the east shaft 30 feet deeper or to an even and total depth of 53 feet.

The Taylor lode has been stoped to a further length of 50 feet and to an average depth of 10 feet.

At the Irving and Miller mine 3 open cuttings were made. The whole amounting to about 60 feet in length, and to an average depth of about 8 feet.

The rest of the work done in other sections of the country was merely of an exploratory character.

AFTER TREATMENT OF TAILINGS.

The only district where the washing of tailings has been conducted is Sherbrooke, where Mr. Twist has successfully treated the refuse from the Palmerston mill. He first tried

a buddle, but the results were not satisfactory. He then erected three parallel tables 8 feet long, 2 feet wide covered by seven copper plates each terminated by a riffle.

The tailings, first well mixed with a small quantity of water, are passed through a revolving screen of one eighth inch mesh and the coarse material separated. The fine then flows over the tables, on the two upper plates of which numerous small jets of water impinge to stir up the sand and keep it from settling.

From 675 tons washed, 41 ounces of gold were extracted; a saving of nearly three quarters of a pennyweight per ton. More than enough mercury required to amalgamate the copper plates was recovered from the tailings, and during ten weeks operations 70 lbs. weight were saved.

Mr. Twist, encouraged by the success attending his operations, hopes, next season, by lengthening the tables and making other alterations, to effect a further saving of the gold in the tailings.

IRON MINES.

Consequent on the great rise in the price of iron the deposits of ore in this country have received a good deal of attention. Numerous licenses to search have been taken out in the neighborhood of Whycocomagh, Cape Breton, and the hill section of Pictou County.

At Whycocomagh the iron ore is found in slates probably of Silurian age. One vein about 4 feet 6 inches thick has been opened not far from the waters of the Bras D'Or Lake, and convenient for shipment. The ore has an earthly appearance but analyses of average samples have given, it is stated, 65 per cent. of metallic iron.

ANALYSIS OF IRON ORE FROM THE INDIAN RESERVE, BY DR. HAYES, OF BOSTON.

Pure Iron.....	60.90
Oxygen.....	23.30
Sulphur.....	11
Alumena.....	1.40
Lime.....	1.85
Magnesia.....	1.64
Silica.....	10.80
	<hr/>
	100.00

Many licenses were taken out in the vicinity of Springville on the East river of Pictou County, and prospecting and explorations carried on with vigor, but no reports of such explorations have been received by this Department. The general neglect to comply with the requirements of section 90 of the Mines and Minerals Act is greatly to be regretted. Much information acquired by explorations which might annually be recorded is thus lost, and can only be regained at a further sacrifice of much time and money.

From personal observation I noticed that most of the exploring was on veins of red hematite and the specular variety; the veins of red hematite presenting the most promising appearances. Near Webster's, on McLellan's Mountain, a vein varying in thickness from 8 to 40 feet has been proved by Mr. Donald Fraser to extend for some two miles and a half; the country rock being a soft slate and the gange of the vein siliceous.

Fresh discoveries of limonite are reported to have been made not far from Glengary R. R. station, but the locality has not been clearly defined.

The only mines actually in operation are those at Clementsport and Londonderry.

The POTTER mine the property of the Annapolis Iron Mining Company at Clementsport, neglected for several years, was reopened during the summer under the management of Mr. A. Conant. During the ten weeks that the mine was worked about 1000 tons were extracted and employment given on an average to 15 men. Of the quantity mined, 600 tons were smelted in the furnace on the ground and a yield of 163 tons of pig iron was obtained and shipped to Boston.

The yield of metal from the furnace was much smaller than analysis of the ore warrants; and future runs in charge of reliable furnacemen will doubtless be more successful. Preparations are in progress to establish the mines and iron works on a permanent basis, and during the coming season large quantities of raw ore probably will be exported for reduction in the furnaces of Pennsylvania.

LONDONDERRY.

I am indebted to the courtesy of Mr. Livesey the resident director, for facilities afforded me of examining the property and works of the Intercolonial Iron and Steel Company. Numerous excavations made along the outcropping of the vein, which has been traced for 12 miles in a direct line, have proved the existence of a series of valuable deposits of ore, but the principal mining is on a portion of the vein about two miles from the works, where an

adit lately driven 240 feet below the back of the vein intersects a body of ore as extensive as any cut nearer the surface. Hence the supposition hitherto generally held that this vein was similar in character to the "gash veins" of Missouri would seem to be incorrect, and the probabilities are that the vein carries productive ore to depths which will not be reached for many years to come.

The difficulties connected with the transportation of supplies which have hitherto greatly retarded the growth of the iron business at Londonderry having been in a measure removed by the opening of the Intercolonial railroad, the development of this important industry may now be expected to progress with rapid strides.

ACCIDENTS.

It is to be regretted that the number of fatal accidents at the collieries considerably exceeds those of the two previous years. An excess over late years was certainly to be expected on account of the increase of business; yet the proportion is greater to the amount of work and number of persons employed than the average in the collieries of Great Britain.

	Gt. Britain.	Nova Scotia.
	1871.	1872.
Number of persons employed	370,881	3522
Quantity of coal raised	117,439,251	880,950
Lives lost by the accidents	1,075	13
Persons employed per lives lost . . .	345	271
Tons of coal raised per life lost . . .	109,246	67,765

The high average of this years fatalities cannot be accounted for on the ground that the coal mines of the Province are peculiarly dangerous. With but few exceptions the roofs over the seams are sound and require little or no timber while the seams themselves can generally be wrought with perfect safety.

It would seem rather to be due—if all the reports can be accepted as correct—to the rashness or ignorance of consequences on the part of individual miners. Consequently little blame can be indirectly charged to the mine managers; yet a feeling of something more than regret seems to be expressed in the reluctance shown by some to report accidents which have happened in mines under their superintendence.

Plausible excuses are always to be found when accidents do occur, nevertheless a more strict surveillance (by those in charge) has elsewhere been attended by a sensible decrease in the ratio of deaths to tonnage, and doubtless if attended to here would also be followed by the same happy results.

In Great Britain since the commencement of the inspection twenty years ago the proportion of deaths to the number employed has decreased from 1 in 219 persons to 1 in 345 persons.

A stricter discipline and a more general observance of regulations would be advantageous in some of the mines. It would at least be well if mine managers and overmen made it a more general rule to caution every new hand who goes under-ground and especially those who have not served an apprenticeship in mines, of the dangers that are particularly to be guarded against in the pits under their charge.

It will be noticed on referring to the table that besides fatal accidents several very serious ones happened which in their consequences are almost as disastrous as though they had been fatal. Men have been maimed for life, and the burden of their future maintenance thrown on their relations and friends. This part of the list, full as it is, I have every reason to believe, is incomplete, and that the report of several casualties has been withheld.

The following tables state the accidents reported and shows the number of deaths that have resulted from them.

TABLE OF ACCIDENTS.

No.	Date.	Name.	Mine.	Cause.	Extent.
1	March 23.....	Niel Fergusson	Sydney.....	Explosion of gas.....	Slightly burnt.
2	" 26.....	Norman McIver.....	Victoria.....	Fall of roof coal.....	Fatal.
3	April 10.....	Angus McCormack.....	Sydney.....	Fall of stone	Fatal.
4	" 17.....	Wm. Sumners.....	"	Fall-down shaft.....	Fatal.
5	" 18.....	James Haley.....	Nova Scotia.....	Fall of coal.....	Leg broken.
6	May 27.....	Wm. Hamilton.....	Intercolonial.....	Knocked off train of tubs..	" "
7	"	John McInnes.....	Acadia.....	Fall of Coal.....	Fatal
8	June 5.....	Angus Boyd.....	Meridian (gold)...	Fall-down shaft.....	Fatal
9	" 12.....	James Bonner	Sydney.....	Fall of stone.....	Severely cut.
10	" 13.....	Angus Morrison.....	"	Fall of coal.....	Seriously injured.
11	"	John Leadbeater.....	Intercolonial.....	Explosion of powder.....	Fatal.
12	"	Wm. Mirtan.....	"	"	Severely burnt.
13	July 6.....	Donald McDonald.....	Caledonia	Fall of coal.....	Shoulder blade broken.
14	" 22.....	Archy McDonald	"	Caught by cage in shaft.....	Arm broken.
14	" 24.....	Bennett McKinnon	Victoria	Explosion of gas.....	Slightly burnt.

TABLE OF ACCIDENTS.—(Continued.)

No.	Date.	Name.	Mine.	Cause.	Extent.
15	Sept. 6	Edward Winter	Victoria	Fall of coal	Fatal.
16	" 11	Malcolm Morrison	Sydney	Fall of coal	Ribs broken.
17	" 13	James Lammond	"	Fall of stone	Fatal.
18	" 24	Niel McDonald	Reserve	Crushed by wagons	Severely injured.
19	{ Oct. 7	William Skelley	Intercolonial	Explosion of gas	Very seriously burnt.
	" "	D. Campbell	"	"	Fatal.
	" "	Alexander Finlay	"	"	Severely burnt.
20	" 15	Anthony McDougall	Lorway	Crushed by cage	Fatal.
21	" 20	Charles Carmichael	Gowrie	Crushed by machinery	Fatal.
22	Nov. 7	James Reeves	Acadia	Fall of coal	Fatal.
23	" 16	Alexander Cameron	Intercolonial	Explosion of gas	Slightly burnt.
24	" 18	Alexander Ross	"	Crushed by tubs	Fatal.
25	" 19	Joseph Chappell	"	Explosion of gas	Slightly burnt.
26	{ " 21	Allen McLean	Victoria	Fall of coal	Severely bruised.
	" "	Allen McEachren	"	"	"
27	Dec. 2	Angus McLean	Gowrie	Run over by wagon	Fatal.

FATAL ACCIDENTS.

Explosion of gas, 1 ; explosion of powder, 1 ; falls of coal and stone, 6 ; accidents in shafts, 3 ; crushed by machinery, 1 ; crushed by tubs, 2 ; total, 14.

EXPOSITIONS OF GAS.

Of the five explosions of gas reported only one was attended by fatal results.

Numbers 1, 14, 23 and 25 were caused by carelessness or inattention to orders on the part of the individual men who suffered and call for no special comment.

Number 19 was an accident of a much more serious character and was undoubtedly caused by the gross negligence of one of the party in consequence of which all were severely burnt. Without minutes of the evidence adduced at the inquest, I am unable to accurately state how the accident did occur, but from what I heard at the colliery shortly after the occurrence I understood that William Skelly, Alexander Findlay and David Campbell worked together in one bord. The two former as miners, the latter, quite a young man, as loader. On the morning of the 7th of October when they went down as usual to work they were warned by the fireman that gas had accumulated in their bord. The two miners with safety lamps in their hands went in, leaving Campbell with a naked light in the return level. They brushed the gas out as they thought and calling to Campbell came down to meet him. Just as he reached the corner, and before entering the bord, the gas fired at his lamp and all three were severely burnt. Apparently Campbell was the least injured, but he never recovered from the shock and died fifteen days afterward.

EXPOSITION OF POWDER.

Accident number 11 showed a recklessness by no means uncommon in the handling of powder by miners. John Leadbeater was engaged at the Intercolonial colliery charging a hole with

powder on the 13th of June. Through negligence some powder had remained in his "skip" from the previous charging, and this falling on his naked light standing close by him on the pavement flashed, and communicated the flame with the powder in the canister, causing it—a quantity of about 5 lbs.—to explode and injure him so severely that five days subsequently he expired. His companion, William Mirtan, was at the same time seriously burnt by the explosion but finally recovered.

FALLS OF COAL AND STONE.

Most of the casualties caused by falls of coal and stone were due to the neglect of the persons injured, to set props and sprags or remove blocks of coal and stone known to be loose and unsecured.

Accident No. 2. Norman McIver, but the moment before he was himself crushed, had warned those working with him of the danger in which they stood. He had sought for a prop with which to temporarily protect himself, but not finding one in any of the bords near, returned to take down the shaken roof coal. He commenced to do so, when a greater quantity fell than he looked for, and his life was sacrificed. Accidents will sometimes occur with the most careful men, but usually that indifference which grows on men inured to dangers is the source of most of those falling under this head.

No. 3. Angus McCormack working the pillars at the Sydney Mines, was crushed by the fall of a stump of a fossil tree, "a caldron bottom," from the roof. The fall of these blocks of stone from the "pot holes" is always sudden and their position in the roof often escapes the eye of the most experienced miner.

No. 15. Occurred at the Victoria Colliery. Edward Winter was a filler in the pit, and on the morning of the 6th September having some spare time on his hands and desirous of learning how to cut coal, went into one of the rooms where Malcolm McNeil and John Carey were at work and asked Carey for a "spell of the pick;" his request being granted he began to work at a block of coal left in the holing. He struck but a few blows before a mass of coal weighing over a ton broke away from the face and falling on him crushed.

him instantly to death. The seam being highly inclined when the working face is holed and sheared, masses of coal are apt to break off suddenly especially where a "lype" runs through the coal. As McNeil and Carey left a block of coal unwrought in the holing presumably fearing some such accident, it seems to me they were greatly to blame for allowing Winter to work where he did.

September 13th—Jas. Lannand a pit driver was instantly killed by a mass of stone falling upon him from the roof, at one of the stations where the boys wait with the horses for the empty tubs going inbye. The roof is of freestone and had stood secure for two years. It was supposed to be solid but it appears there was a parting in it about 10 inches up at which point the stone separated. At the inquest on the body, one of the colliers stated that he had observed a crack coming in the stone a day or two before and told two of the driver boys to inform the deputy or overman. This they neglected to do and a fatal accident was the result.

No. 7. McInnes neglected to sound the coal still standing from his last shot before he began to wedge down a block not detached, and a mass hanging above fell on him and killed him.

No. 22. A similar case to No. 15. Reeves was working a stump of coal left in the holing when a mass of coal fell from the face and crushed him to death. Unlike Winter, he worked contrary to the advice of his partner.

ACCIDENTS IN SHAFTS.

No. 4. William Summers was a sinker at the new winning at the Sydney mines. When stepping out of a tub into the mouth of a drift which opens into the staple shaft he missed his foothold and fell to the bottom of the shaft, a distance of 22 fathoms.

No. 8. When the men where returning after dinner to their work in the Meridian (gold) mine, Sherbrooke, and were descending the shaft, Angus Boyd lost his hold and fell a distance of fifty feet, passing five men who were on the ladders below him without touching them. The deceased is said to have been subject to fits of giddiness after smoking much. A pipe was in his mouth when he fell.

No. 22. This accident was precisely similar in character to that which occurred to John Lockman two years previously at the neighboring International colliery, and was caused by the deceased Anthony McDougall, incautiously leaning over the mouth of the shaft down which he wished to call. The cage in descending struck him and he almost instantly expired.

ACCIDENT BY MACHINERY.

No. 21. Charles Carmichael was the night pumping engineer at the Gowrie colliery. On the night of the accident the water was "out" early and the engine stood for some hours. When he went to start again the engine stuck on the centre, the steam being low, and in order to get the engine off the centre he threw his weight on the fly-wheel. Incautiously he placed both feet on an arm of the fly-wheel, and the engine starting suddenly, before he was able to extricate himself he was drawn into the race and thrown violently against the wall. His injuries were such that he died almost immediately.

CRUSHED BY TUBS.

No. 24. This accident happened to a lad who had not been working long underground. He was a loader at the Intercolonial colliery, and, being at work near the foot of the slope, was called by the onsetter to help him replace a tub which was off the track. While so engaged, a coupling link in the rake of tubs broke and four of the tubs ran back, caught him, and crushed him so severely that he lived only three days. Those with him succeeded in making their escape, but he, unaccustomed to the position, failed to catch in time the meaning of their warning cries.

If the above list had included accounts of one or more accidents from *Explosions of Steam* no astonishment would have been caused in the mind of any one familiar with the condition in which steam boilers are now often kept at some of the mining establishments. A condition probably due to a false spirit of economy engendered by the slackness of trade during late years.

Boilers may be seen in use with seams and rivet holes leaking, with water running over and corroding them where they rest on

the brickwork, or with plates strained and bulged or covered with patches. In Great Britain the Mines Regulation Act under the head of General Rules states: "Every steam boiler shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in the boiler, and with a proper safety valve." And these provisions are not always to be met with in this country.

As illustrations of the utter recklessness with which men will expose their lives to dangers, when the dangers, although acknowledged imminent, are familiar, invisible and temporarily doubtful, I mention two cases; both in connection with marine boilers in tug boats at Cape Breton.

One boiler, although repeatedly repaired when cracks had suddenly appeared and seams had started, was used in that condition for several years, and until early last Winter when it actually exploded, sinking the boat, but luckily killing no one.

The other, in bad order on its first arrival four years ago, was still in use at the time of my visit to Cape Breton in September. It had been repeatedly patched and repatched, and was never safe, if safe at all, except with a much lower pressure of steam than the tug boat required. It has, I have been since informed, blown a hole in its shell, and is now likely to be condemned. I was once on board the boat, when the engineer became interested in a race, and without any urging, forced the boiler to a pressure of 55lbs., or 20 lbs. beyond a pressure, that, but a short time before he had complained of as unsafe.

To lessen the danger from similar sources of accident, there is the Steamboat Inspection Act, which has only to be enforced to be of service: but land boilers are under no supervision whatever. Still, rules and regulations, if not authorized with due care, may become as dangerous as lawless recklessness. It was only last Summer that riding in the cab of a locomotive on a colliery road, I noticed with much surprise the levers of both safety valves tightly wedged down, making it utterly impossible for steam to escape at any pressure. Pointing it out to the driver, I asked the reason, as I saw the Salter balances were new and apparently in order. His reply was, "Oh! the office ordered those thimbles to

be put on the balances to let the valves blow off at 85 lbs., but finding that that pressure was not sufficient for the work to be done, and not being allowed to remove the thimbles, *I wedged the levers.*" The officials in charge of the road could hardly be otherwise than aware of the manner in which their instructions, if carried out to the letter, were broken in spirit. However this was a case requiring only to be mentioned in order to be remedied.

I have mentioned the above cases for the purpose of showing that the men of Nova Scotia have no greater regard for the value of human life than the men of Great Britain and Pennsylvania, where such accidents as the Hartley, the Oaks, and the Avondale disaster happening, aroused the spirit of the people of those countries to call on their governments to interfere and endeavor by wise legislation to guard against such wholesale slaughter in the future. In Great Britain inspection has been attended by a marked diminution in the number of accidents. In the anthracite regions of Pennsylvania the stringent bills passed by the State Sessions of 1870 and 1871 have been actively enforced, but have been in operation for too short a time to have any effect. In this Province, guided by the experience of Great Britain, the legislature appointed an Inspector of Mines, with the understanding that he should be ruled by the practice of English Inspectors. My predecessors in office governed themselves according to that understanding, but as I have had personally no experience of the working of the Inspection Acts of Great Britain, I should prefer to see a *written law*, not only for my own guidance, but also for the guidance of those actually engaged in mining, of whom a similar knowledge is required.

I therefore beg leave to call the attention of the Government to that which in my humble opinion seems an incompleteness in the present law relating to mines and to suggest (for the better preservation of life and property) an immediate and serious consideration of the necessity that exists for explaining more fully and explicitly section (5) of the Mines and Mineral Act, rather than to wait until some appalling disaster,—from which happily the Province has hitherto been free,—too plainly points to the necessity of legislative interference.

In view of the increasing royalty and the inevitable law which annually requires the sacrifice of a proportionate number of the men engaged in mining, should a Bill similar in purport to the Mines Regulation Act of Great Britain receive the approbation of the Legislature, it might well be supplemented by an agreement on the part of the Government to insure the lives of all miners against fatal accidents, demanding no premium from the men and agreeing to pay, say : \$200 to the family of each unfortunate man, to every widow \$1 per week for ten years or until marriage, and to every child \$1 per week; to boys until they are 12 years of age and to girls until they are 16 years of age. If such an agreement should be carried out it would obviate a good deal of suffering and misery.

I wish also to state that several of the Agents have called my attention to the different interpretations of the term "slack" as now rendered by the practice at certain collieries and the rough method adopted by others in estimating the quantities of coal sold and shipped.

As the varied practice is in consequence of the absence of legal definitions and requirements, I deem the settlement of these questions, which not only effect the amount of royalty due the Crown but also cause jealousy among the operators, to be of great importance, and I beg to suggest that an opinion be taken from persons who prior to the Act relating to the surrender of the mines to Her Majesty in 1858 were in the employment of the General Mining Association and capable of authoritatively stating what the clause, "*except coal now known in the said Province as slack coal*" positively meant.

I have the honor to be

Your obedient servant,

HENRY S. POOLE.

The Hon. Daniel Macdonald, M. P. P.,
Commissioner of Public Works and Mines.

APPENDIX.

DYNAMITE OR GIANT POWDER

Is made by mixing nitroglycerine with infusorial earth. It is an ungrained powder, of a greyish brown color, resembling moist sawdust in appearance. Insoluble in water, it is not affected by time or exposure to air and moisture. It congeals at about 42° Fahrenheit. In the open air or in ordinary packing it burns without exploding. Its combustion produces carbonic acid, carbonic oxide, hyponitrous acid and water. When heated above 212 degrees (the boiling point of water) it throws off noxious fumes and becomes weakened and finally destroyed.

It should, therefore, be kept in some place having a temperature between these extremes :

When frozen it can be thawed by being kept for a time in this proper temperature. It is perfectly safe to thaw the powder by placing the cartridges in an open vessel and the vessel then placed in hot water. When it becomes soft it is ready for use, and its strength unimpaired. As it freezes very slowly, no inconvenient haste is required in its application.

Unlike gunpowder, its explosion is instantaneous. The entire mass of powder explodes as if it were a single grain. This quality in connection with its extraordinary evolution of gases, causes its explosive effect to be especially great in solid substances. Its explosion produces carbonic acid, nitrogen and water.

There are three methods of exploding it: 1st.—By a violent explosion either in or into it. 2nd.—By confining it in a very strong and tight vessel, and setting it on fire, or heating the vessel sufficiently. 3rd.—By a percussive shock so intense as to produce heat and violence equivalent to an explosion. Practically it cannot be exploded by accident. Fire alone will not explode it, nor heat in any form. Nor will any amount of mere weight upon it or simple pressure of any kind explode it. It cannot be exploded by any of the ordinary movements, accidents or incidents which attend its handling, transportation or use. The pressing it into cartridges, or ramming it into bore-holes with a *wooden rod* however hard, throwing it about, or even the crushing or violence of overturning wagons or collisions of cars will never explode it. The burning or flashing of gunpowder, unconfined, is not sufficient.

When set on fire while under *confinement* in some *tight* and *strong* vessel, the burning of the powder produces gases, which, finding no escape, at length cause a pressure so great as to produce, with the heat of the burning, an explosion of the unburnt powder.

A vessel of the strongest tin has not the requisite strength; it, like paper cartridges, ordinary packing boxes, barrels, casks, &c., will be burst asunder by the gases before the pressure is sufficient to cause explosion.

Cartridges.—Except in special cases it is better to use the powder in the form of cartridges. It is more economical in both time and powder, and the explosion is more certain.

Fuse.—Ordinary fuse may be used, but to make sure of a discharge in all cases and to keep the powder from being burned by fire from a leaky fuse, the best fuse is recommended and of a size to fit the caps precisely.

Caps are manufactured for the special purpose of exploding Giant Powder. They are more heavily charged with fulminate than ordinary ones and corresponding care should be taken in their handling and use. A pair of cutting nippers, with their edges blunted may be used in securing the caps tightly and firmly to the fuse.

Drill-holes, Charges, &c.—As to the diameter and depth of holes, and where they should be made, and the direction they should take, and also as to the quantity of powder to be used and many other matters, no definite or arbitrary rules can be laid down for blasting with any explosive. As a general rule, the drill-holes and charges for Giant Powder can be and should be comparatively small. Experience has proved that 3-4 inch octagon steel with 3 1-2 pound hammers used by single hand drillers are best adapted to use the Powder to the greatest advantage. Holes one inch in diameter are abundantly large for all ordinarily heavy work; for light work, correspondingly smaller ones should be made. The quantity of powder should not only be proportionate to the resistance, but the hole should be proportionate to the powder. As by reason of its quickness, Giant Powder in bore-holes is nearly as effectual without tamping as with it, it can be exploded with great advantage without any tamping at all in natural fissure and artificial cracks. It is, therefore, urged that advantage be taken of this extraordinary quality as often as practicable.

Charging.—The charge must fit and fill the bottom of the bore and be packed solid. This is an essential pre-requisite to an effective blast. The only way to secure it is this: Take a cartridge as nearly as possible of the same size as the bore and cut it into sections from one to two inches long. With a *hardwood* rammer as large as will run freely in the hole, press these sections into the bore-hole one by one with sufficient force until each section is driven to the bottom and expanded laterally so as to fill the hole solidly in every direction. Any sized cartridge may be used provided it is thus put in. In wet holes, the sections should be rolled in additional paper and the ends closed to prevent the powder from getting mixed with water. *Metallic* rammers must not be used.

Firing the Charge.—The modes of exploding the charge are various. After the cap is put on the end of the fuse, and with a pair of nippers pressed firmly around the *edge* into the fuse, some grease, soap or wax should be rubbed round the upper end of the cap to make the same air and water tight. Now insert the fuse into the bore-hole until the cap rests on the charge, then take a small piece of a cartridge, about three quarters of an inch, push it down with the ramrod and press it round the cap so that the latter is inserted in the powder to about half its whole length, but never deeper, because if part of the fuse were in the powder above the cap would be burnt up without exploding. Another way of exploding the powder is to cut off about an inch in length of a cartridge, smaller in dimension than the borehole, press into this piece of so called "priming cartridge" the cap, after it is well fastened to the fuse, and with a string tie both together to prevent the cap from being withdrawn, then let this priming cartridge down the bore-hole until it rests on the charge, and fire the fuse.

The stronger grades of Giant Powder frequently do not require any tamping, and wherever *water tamping* can be used as for instance in all downward holes, it should be applied. It excludes every particle of air and forms a solid column on the charge.

In case the blast misses fire, put in another primer.

A TABLE*Of the Dimensions of Pit Tubs in use at the principal Collieries.*

NAME.	Track gauge.	Dia. of Wheels.	Wheel base.	Height above track.	Width.	Length.	Height.	Capacity.
	in.	in.	in.	in.	in.	in.	in.	C. ft.
Joggings*.....	30	12	20	37	37	48	23	23.6
Acadia*.....	48	11	22	31	42	60	24	35.
Albion Mines*.....	26	12	18	42	33	44	28	23.5
Intercolonial*.....	32 $\frac{1}{2}$	12	20	31	27	50	24	18.8
Nova Scotia*.....	48	12	22	41	40	60	28	38.8
Blockhouse.....	26	11	20	43	33	43	30	24.6
Caledonia*.....	23 $\frac{1}{2}$	12	18	44	33	40	30	22.9
Glace Bay*.....	30	10	16	36	33	60	24	27.5
Gowrie.....	24	10	18	38	31	42	26	19.6
International*.....	32	14	18	45	30	49	29	24.6
Lorway.....	32	11	20	34	34	44	21	18.2
Reserve.....	26	11	20	43	32	44	30	24.4
South Head.....	24	8	16	26	27	42	16	10.4
Sydney.....	24	11	16	40	34	37	27	19.6
Victoria*.....	24	11	19	44	32	54	31	31.
Chimney Corner.....	24	12	20	37	33	42	23	18.4

*Tubs fitted with end doors.

*COAL EXPORTS FROM GREAT BRITAIN AND UNITED
STATES TO THE ATLANTIC PORTS OF AMERICA.*

GREAT BRITAIN EXPORTED.	COAL.		VALUE.
	1870.	1871.	1871.
	Tons.	Tons.	
To British North America	224,955	189,274	£ 86,318
U States of the Atlantic	80,014	91,483	61,524
British West Indies	174,198	175,335	99,387
Foreign West Indies	338,801	281,877	149,574
Mexico	3,256	2,821	1,227
U. States of Colombia..	2,893	11,241	7,190
Brazil	261,508	316,417	188,036
Uruguay	122,686	96,648	65,888
Argentine Confederation	59,729	62,860	42,970
Total	1,263,040	1,227,956	£702,114

UNITED STATES EXPORTED.	COAL.		VALUE.
	1871.	1872.	1871.
	Tons.	Tons.	
To Canada	216,633	.....	.....
Cuba.....	11,932	.....	.....
China	1,186	.....	.....
East Indies.....	1,284	.....	.....
U. States of Colombia..	31,383	.....	.....
Hayti.....	2,415	.....	.....
Other Countries	3,117	.....	.....
Total.....	267,951	300,878	\$1,369,236

TABLES shewing the number of Gold Mines worked, the average number of men engaged in mining, the quantity of quartz Raised and Crushed, the average yield per ton, and the total yield of Gold, &c., &c., in the several Gold Districts, as shewn by the Statistical Returns of the Deputy Commissioners

JANUARY, 1872.

DISTRICT.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.		Quartz Crushed.		Yield per ton.			Maximum yield otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Tons.	Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	2	30	3	1	2	80	18	1	0	20	1	8	...	...	...	18	12	12
Wine Harbor.....	2	37	5	4	1	288	288	...	11	06	7	17	...	...	...	161	11	...
Sherbrooke.....	11	135	12	9	3	486	486	...	13	20	2	10	5	...	...	336	17	12
Tangier.....	3	55	4	3	1	60	212	...	9	23	...	18	10	...	...	105	11	6
Montagu.....	3	47	2	2	...	43	43	...	4	14	21	5	14	8	...	194	...	18
Waverley.....	2	65	4	3	1	72	95	...	12	04	...	14	16	...	...	57	17	...
Oldham.....	12	31	3	1	2	...	78	...	1	2	16	2	13	...	...	87	18	23
Renfrew.....	8	27	5	2	3	...	160	...	...	4	15	...	10	18	...	36	17	08
Uniacke.....	2	14	4	3	1	121	121	...	...	5	3	...	17	12	...	31	1	...
Caribou.....	2	10	2	1	1	22	...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd. & other Dist's.	1	4	9	5	4	40	40	...	4	18	...	04	18	...	...	9	10	...
Total.....	48	455	53	34	19	1212	1541	...	13	12	7	17	...	...	...	1039	17	07

MARCH, 1872.

DISTRICT.	Number of Mines being worked.	Average No. of men daily em- ployed in Mining.	Total number of Quartz Mills in District.	Do. Steam Power		Do. Water Power		Quartz Raised.		Quartz Crushed.		Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
				Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.			
Stormont.....	2	28	3	1	2	100	1½	3	13	13	3	13	3	13	13	5	10	8					
Wine Harbor.....	2	29	5	4	1	182		...	10	4	1	16	12	93	14								
Sherbrooke.....	13	135	12	9	3	531		...	12	21	4	01	18	342	06								
Tangier.....	4	60	4	3	1	123		...	8	20	...	14	04	91	7	20							
Montagu.....	4	47	2	2	...	42		...	3	21	8	10	18	141	7								
Waverley.....	2	50	4	3	1	72		...	2	6	12	5	6	14	...								
Oldham.....	10	38	3	1	2	72		...	8	16	...	16	15	...									
Renfrew.....	6	27	5	2	3	100		...	...	...	...	...	...	...		
Uniacke.....	2	12	4	3	1	30		...	...	...	...	...	...	...		
Caribou.....	2	10	2	1	1	24		...	...	...	...	...	...	...		
Unprocl'd. & other Dist's.	1	7	9	5	4	180		...	2	22	...	2	22	...									
Total.....	48	443	53	34	19	1456		...	13	20	8	10	18	888	2	1							

APRIL, 1872.

Stormont.....	2	10	3	1	2	24	64	819	17	2	28	2	5
Wine Harbour.....	2	36	5	4	1	205	205	1613	16	13	169	12	...
Sherbrooke.....	12	145	12	9	3	708	708	1203	3	08	430	...	...
Tangier.....	5	17	4	3	1	52	91	00712	19	18	34	13	...
Montagu.....	5	40	2	2	...	55	6	40504	8	01	25	11	...
Waverley.....	2	42	3	2	1	110	110	01214	0	14	69	03	...
Oldham.....	8	23	3	1	2	54	.....	05	10	2	13	11	14
Renfrew.....	6	7	5	2	3	104	.....	0715	8	5	39	13	...
Uniacke.....	2	3	4	3	1	35	35	0904	9	4	16	07	...
Caribou.....	2	12	2	1	1	120	10	0303	3	3	18	17	...
Unprocl'd & other Dist's...	1	8	9	5	4	20	200	0220	0	2	28	9	12
Total.....	47	343	52	33	19	1399	1697	1007	8	01	873	19	17

MAY, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.		Quartz Crushed.		Yield per Ton.			Maximum yield otherwise than from Crusher.			Gold obtained.			Total yield of Gold.		
						Tons.		Tons.		Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Stormont.....	1	10	3	1	2	35		170		111	5	...	...	...	...	265	8	17	...	...	...
Wine Harbor.....	2	38	5	4	1	170		472		18	04	...	...	...	...	429	06	14	...	...	...
Sherbrooke.....	14	150	12	9	3	472		*206		04	16	...	...	...	...	28	01	15	...	...	...
Tangier.....	4	13	4	3	1	106		81		30	19	...	...	...	...	250	7	...	...	...	...
Montagu.....	5	40	2	2	...	55		315		07	03	...	...	...	...	112	2	...	...	...	...
Waverley.....	2	37	3	2	1	315		66		14	22	...	...	...	...	49	04	23	...	...	...
Oldham.....	10	30	3	1	2	.....		39		5	18	...	...	...	...	11	2	6	...	...	...
Renfrew.....	3	12	5	2	3	39		20		17	03	...	...	...	...	17	07	...	...	...	...
Uniacke.....	3	4	4	3	1	20		27		103	22	...	...	...	...	32	6	...	...	...	...
Caribon.....	2	8	2	1	1	17		200		003	02	...	...	...	...	31	1	11	...	...	...
Unprocl'd & other Dist's.	1	7	9	5	4	200						...	...	...	...		
Total.....	47	349	52	33	19	1429		1596		016	09	...	...	...	...	1226	07	14			

* 100 refuse.

JUNE, 1872

Stormont.....	2	11	3	1	2	75	125	2	13	4	1	18	252	18	5
Wine Harbour.....	2	27	5	4	1	120	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sherbrooke.....	12	117	12	9	3	322	322	.....	19	03	2	.....	308	02	08
Tangier ..	4	38	4	3	1	48	57	.....	10	18	2	18	30	12	06
Montagu ..	4	49	2	2	.....	55	39	8	3	13	14	.....	318	18	.....
Waverley ..	2	30	3	2	1	103	103	.....	09	19	.....	11	50	09	.....
Oldham ..	6	19	3	1	2	.....	23	2	4	8	3	.....	51	0	8
Renfrew ..	2	16	4	2	2	.....	26	.....	4	23	0	4	6	9	.....
Uniacke.....	3	7	4	3	1	26	26	.....	14	10	2	.....	18	10	.....
Caribou.....	2	4	2	1	1	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unprocl'd & other Dist's..	1	9	9	5	4	200	200	.....	2	14	.....	2	26	04	.....
Total	40	327	51	33	18	959	921	103	02	14	.....	.....	1063	03	03

JULY, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily em- ployed in Mining	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	1	18	3	1	2	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wine Harbor.....	2	32	5	4	1	213	313	1	418	.....	6	10	8	.....	.....	.....	492	.....	.....
Sherbrooke.....	11	120	12	9	3	259	259	1	6	4	2	17	.....	.....	.....	.....	339	2	12
Tangier.....	5	23	4	3	1	89	126	.....	16	07	2	8	04	.....	.....	.....	102	15	18
Montagu.....	4	50	2	2	.....	46	46	2	18	11	3	9	14	.....	.....	.....	134	10	.....
Waverley.....	2	34	3	2	1	163	163	.....	12	09	1	2	05	.....	.....	.....	100	17	.....
Oldham.....	8	27	3	1	2	84	84	1	14	8	9	4	18	.....	.....	.....	144	12	9
Renfrew.....	4	19	5	2	3	64	64	.....	7	2	.....	7	14	.....	.....	.....	22	13	.....
Uniacke.....	3	5	4	3	1	38	13	.....	11	18	19	.....	.....	.....	.....	.....	7	13	.....
Caribou.....	1	5	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unprocl'd. & other Dist's.	1	8	9	5	4	200	200	.....	02	16	.....	02	16	.....	.....	.....	26	18	12
Totals.....	42	341	52	33	19	7116	1268	1	01	15	9	4	18	.....	.....	.....	1371	02	03

AUGUST, 1872.

Stormont	1	18	3	1	2	146	146	...	14 18	...	14 18	...	107 15	...
Wine Harbour.....	1	47	5	4	1	220	220	1	9 19	...	1 9 19	...	328	...
Sherbrooke.....	11	115	12	9	3	492	492	...	18 12	...	1 12 18	...	460 15	20
Tangier.....	5	22	4	3	1	117	117	...	08 23	...	1 01 19	...	54 16	19
Montagu.....	3	43	2	2	...	59	59	2	17 22	...	3 2	...	170 18	...
Waverley.....	2	34	3	2	1	155	155	...	14 05	...	1	...	110 07	...
Oldham.....	6	27	3	1	2	96	96	1	5	...	5 6 4	...	119	8
Renfrew.....	4	15	5	2	3	60	60	...	...	...	...	...	...	...
Uniacke.....	2	3	4	3	1	12	12	...	14 18	...	8 14 17	...	65 16	...
Caribou.....	1	5	2	1	1	11	11	...	11 11	...	16 17	...	22 07	12
Unprocl'd & other Dist's..	1	9	9	5	4	200	200	...	02 16	...	0 02 16	...	26 14	10
Total.....	37	318	52	33	19	1568	1568	...	18 17	...	8 14 17	...	1466	18 13

SEPTEMBER, 1872.

DISTRICTS.	Number of Mines being worked	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.		Quartz Raised.		Quartz Crushed		Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold		
				Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.			
Stormont.....	1	13	3	1	2	21	21	1	5	17	1	5	17	—	—	—	27	—	—	—	—	—	
Wine Harbour.....	1	23	5	1	4	204	24	—	2	20	0	5	—	—	—	†72	8	1	—	—	—		
Sherbrooke.....	11	102	12	9	3	376	*876	—	17	15	1	5	21	31	—	362	10	20	—	—	—		
Tangier.....	6	32	4	3	1	73	70	—	12	18	1	8	4	—	—	44	14	8	—	—	—		
Montagu.....	3	42	2	2	—	31	31	3	6	05	5	—	—	—	—	102	13	—	—	—	—		
Waverley.....	2	34	3	2	1	141	141	—	11	16	0	11	17	—	—	82	10	—	—	—	—		
Oldham.....	6	27	3	1	2	45	45	1	8	7	3	13	18	—	—	63	12	2	—	—	—		
Renfrew.....	6	23	5	2	3	88	88	—	7	16	1	0	14	—	—	30	13	—	—	—	—		
Uniacke.....	4	5	4	3	1	35	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Caribou.....	2	7	2	1	1	17	114	—	13	20	—	14	14	—	—	78	19	18	—	—	—		
Unprocl'd & other Dist's.	1	9	9	5	4	300	300	—	2	—	—	2	—	—	—	30	9	08	—	—	—		
Total	43	317	52	33	19	1331	1710	—	13	15	3	13	18	31	—	895	10	09	—	—	—		

*500 Tons Tailings re-Crushed.

†69 lbs. from Plates, &c.

*500 Tons Tailings re-Crushed.

†69 ozs. from Plates, &c.

NOVEMBER, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily em- ployed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.		Do. Water Power.		Quartz Raised.		Quartz Crushed.		Yield per ton.			Maximum yield per ton.			Gold obtained other- wise than from Crusher.			Total yield of Gold.		
				Do.	Do.	Tons.	Tons.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.				
Stormont.....	1	1	3	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wine Harbour.....	1	19	5	4	1	130	.....	230	1	7	1	14	4	.....	.....	.....	.....	.....	.....	.....	321	12	13
Sherbrooke.....	10	110	12	9	3	394	.....	394	.....	13	1	14	3	.....	.....	.....	.....	.....	.....	.....	277	9	12
Tangier.....	6	30	4	3	1	69	.....	82	.....	18	1	6	9	.....	.....	.....	.....	.....	.....	.....	75	04	..
Montagu.....	2	44	3	3	..	92	.....	92	.....	4	3	12	.....	.....	.....	.....	.....	.....	.....	.....	111	13	..
Waverley.....	2	39	3	2	1	115	.....	115	.....	13	1	..	8	.....	.....	.....	.....	.....	.....	.....	78	16	16
Oldham.....	8	19	3	1	2	88	.....	88	.....	4	3	2	18	.....	.....	.....	.....	.....	.....	.....	107	7	..
Renfrew.....	3	15	5	2	3	39	.....	39	.....	10	..	11	.....	.....	.....	.....	.....	.....	.....	.....	20	.....	..
Uniacke.....	4	4	4	3	1	27	.....	21	.....	10	..	14	17	.....	.....	.....	.....	.....	.....	.....	11	10	12
Caribou.....	2	5	2	1	1	15	.....	15	.....	3	..	5	10	.....	.....	.....	.....	.....	.....	.....	2	15	2
Unprocl'd & other Dist's.	4	46	9	5	4	330	.....	300	.....	2	..	3	..	.....	.....	.....	.....	.....	.....	.....	56	10	11
Total.....	43	332	53	34	19	1299	.....	1376	.....	11	3	12	.....	34	10	10	.....	.....	.....	.....	1062	18	16

* Crushed sand, washed.

DECEMBER, 1872.

Stormont.....	2	4	3	1	2	85	168	..	3	19	..	19	19	.....	.....	32	2	5
Wine Harbour.....	1	20	5	4	1	177	177	1	18	7	2	1	9	.....	.....	349	1	...
Sherbrooke.....	10	112	12	9	3	432	432	..	13	20	6	13	8	.....	.....	303	10	...
Tangier.....	6	33	4	3	1	54	71	1	3	..	2	19	16	.....	.....	82	17	6
Montagu.....	2	34	3	3	..	114	114	..	17	19	2	2	14	.....	.....	101	12	...
Waverley.....	2	39	3	2	1	174	174	..	13	11	1	..	16	.....	.....	117	5	...
Oldham.....	4	31	3	1	2	42	42	1	2	13	2	12	..	.....	.....	46	16	19
Renfrew.....	2	11	5	2	3	50	.....	..	..	..	..	..	..	.....	.....	.....	.....	...
Uniacke.....	2	2	4	3	1	6	9	1	..	15	1	05	..	.....	.....	9	11	...
Caribou.....	2	4	2	1	1	15	6	..	15	12	1	13	20	.....	.....	4	15	12
Unprocl'd & other Dist's..	2	66	9	5	4	360	332	..	2	6	..	11	13	24	10	62	...	11
Total.....	35	356	53	34	19	1509	1525	..	14	13	6	13	8	24	10	1109	11	5

B.

STATEMENT showing the average daily labor employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ending December 31st, 1872.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, etc. Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total yield of gold	Maximum yield per Ton.	Average yield per man for Twelve Months at \$18.50 per oz.
Stormont.....	14	3	1	2	543	.. 17 09	.....	472 00 11	4 01 18	623 71
Wine Harbour.....	28	5	4	1	2309	1 02 06	.....	+2572 10 18	7 17 00	1699 70
Sherbrooke.....	123	12	9	3	5323||	.. 15 17 41	00 00	4188 09 21	4 01 18	628 27
Tangier.....	33	4	3	1	1622*	.. 10 05	.....	829 08 15	2 19 16	464 74
Montagu.....	20	3	3	..	683	2 12 12	.....	1793 10 06	14 00 00	1658 95
Waverley.....	19	3	2	1	1761	.. 11 17	.....	1032 04 00	1 03 18	1004 84
Oldham.....	28	3	1	2	793	1 05 14	.....	1014 10 14	9 04 18	669 96
Renfrew.....	18	5	2	3	855	.. 07 13	.....	323 03 08	2 12 10	332 00
Uniacke.....	6	4	3	1	364	.. 13 07	.....	241 10 00	8 14 17	743 08
Caribou.....	7	2	1	1	368	.. 11 09	.....	209 15 00	2 17 08	552 35
Unproclaimed and other Districts.....	18	9	5	4	2552	.. 02 13	73 11 06	402 00 13	.. 11 13	413 16
	314	53	34	19	17 173	.. 17 13	114 11 06	15079 03 10	14 00 00	888 41

* 100 Refuse. † 10 oz. from Crushed Sand Washed. ‡ 69 oz. from plates, &c. || 500 Tailings.

Statement showing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOR					SHERBROOKE.					TANGIER.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January.....	30	18	18	12	12	37	288	161	11	..	135	486	336	17	12	55	212	105	11	06
February.....	22	..	..	..	..	27	170	85	..	..	128	562	360	5	12	51	287	115	08	07
March.....	28	1½	5	10	08	29	182	93	14	..	135	531	342	06	..	60	226	91	07	20
April	10	64	28	02	05	36	205	169	12	..	145	708	430	..	..	17	91	34	13	..
May.....	10	..	..	..	..	38	170	265	08	17	150	472	429	06	14	13	+206	28	01	15
June.....	11	125	252	18	05	27	..	..	..	..	117	322	308	02	08	38	57	30	12	06
July.....	18	..	..	..	..	32	313	492	..	..	120	259	339	02	12	23	126	102	15	18
August.....	18	146	107	15	..	27	220	328	..	..	115	492	460	15	20	22	122	54	16	19
September.....	13	21	27	..	..	23	24	*72	08	01	102	+876	362	10	20	32	70	44	14	08
October.....	1	..	..	..	..	25	330	234	4	..	102	209	238	3	6	27	72	63	05	18
November.....	1	..	..	..	..	19	230	321	12	..	110	394	277	9	13	30	82	75	04	11
December.....	4	168	32	2	5	20	177	349	01	..	112	12	303	10	..	33	71	82	17	05
Total.....	14	543½	472	00	11	28	2309	2572	10	18	123	5323	4188	09	21	33	1622	829	08	62

*69 oz. from plates, &c.

† 500 tons tailings. ‡ 100 refuse.

No. 2.

Statement shewing the number of Men employed, Quartz Crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January.....	47	43	194 00	18	65	95	57 17	..	31	78	87 18	23	27	160	36	17 08				
February.....	50	46	148 14	12	45	236	128 19	..	35	66	89 15	11	27	152	58	19 12				
March.....	47	45	141 07	..	50	..	..	..	38	72	166 13	15	27	48	21	01 06	
April.....	40	6	25 11	..	42	110	69 03	..	23	54	13 11	14	7	104	39	13 ..				
May.....	40	81	250 07	..	27	315	112 02	..	30	66	49 04	23	12	39	11	02 06				
June.....	49	39	318 18	..	30	103	50 09	..	19	23	51 00	08	16	26	6	9 ..				
July.....	50	46	134 10	..	34	163	100 17	..	27	84	144 12	09	19	64	22	13 ..				
August.....	43	59	170 18	..	34	155	110 07	..	27	96	119 08	..	15	..	..	..	
September.....	42	31	102 13	..	34	141	82 10	..	27	45	63 12	02	23	88	30	13 ..				
October.....	46	81	93 6	..	42	154	139 12	..	23	79	74 9	14	19	135	75	15 ..				
November.....	44	92	111 13	..	39	115	78 16	..	19	88	107 7	16	15	39	20	..				
December.....	34	114	101 12	..	39	174	101 12	..	31	42	46 16	19	11	..	..	..	
Total.....	20	683	1793 10	6	19	1761	1032 04	..	28	793	1014 10	14	18	855	323	03 08				

STATEMENT showing the number of men employed, Quartz crushed, and Gold obtained each month in each District.

MONTH.	UNLACKE.					CARIBOU.					UNPROCLAIMED, &c.				
	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.
January	14	121	31	01	.....	10	.....	.....	.....	.....	4	40	9	10	.....
February	11	45	30	.....	.....	10	.....	.....	.....	.....	4	100	19	10	.....
March	12	.....	.....	.....	.....	10	.....	.....	.....	.....	7	180	26	02	.....
April	3	35	16	07	.....	12	120	18	07	.....	8	200	28	09	12
May	4	20	17	07	.....	8	27	32	06	.....	7	200	31	01	11
June	7	26	18	10	.....	4	.....	.....	.....	.....	9	200	26	04	.....
July	5	13	7	13	.....	5	.....	.....	.....	.....	8	200	26	18	12
August	3	37	65	16	.....	5	39	22	07	12	9	200	26	14	10
September	5	.....	.....	.....	.....	7	114	78	19	18	9	300	30	09	08
October	4	37	33	15	.....	4	47	50	3	18	41	300	58	10	10
November	4	21	11	10	.....	5	15	2	15	12	46	300	56	10	11
December	2	9	9	11	.....	4	6	4	15	12	66	332	62	00	11
Total	6	364	241	10	.....	7	368	209	15	00	18	2552	402	00	13

GOLD.

Mines Department for 12 Months ended December 31st, 1872.

RECEIPTS.

EXPENDITURE.

DISTRICTS.	Rents.	Royalty.	Sites.	Totals.	Salaries, Surveys, &c.	Return of Rents.	Return of Royalty.	Royalty Commission.	Lands.	Totals.
Oldham.....	361 21	393 31	.....	754 52	246 60	52 67	.....	25 08	.....	324 35
Renfrew.....	496 44	188 09	.....	684 53	473 83	1 95	.....	7 29	.....	483 07
Waverley.....	244 00	308 37	10 00	562 37	.....	.....	274 65	0 66	.....	275 31
Tangier.....	121 61	305 72	.....	428 33	15 00	.....	.....	2 82	144 40	162 22
Stormont.....	212 93	190 05	.....	402 98	332 21	21 43	.....	13 13	.....	366 77
Wine Harbour.....	121 01	1004 00	.....	1125 01	479 00	.....	.....	44 54	.....	523 54
Sherbrooke.....	298 57	2018 63	.....	2317 20	722 90	75 92	.....	114 48	.....	913 30
Ovens.....	35 79	.....	.....	35 79	.....	.....	.....	.....	.....	.....
Fifteen Mile Stream.....	24 00	.....	.....	24 00	.....	.....	.....	.....	.....	.....
Montagu.....	303 09	543 75	.....	846 84	110 00	76 24	.....	23 62	.....	209 86
Uniacke.....	604 16	148 81	.....	752 97	312 00	.....	.....	4 61	.....	316 61
Wagapitcook.....	.....	.....	.....	.....	22 00	.....	.....	.....	.....	22 00
Clays River.....	66 68	107 21	.....	173 89	2 00	.....	.....	5 36	.....	7 36
Caribou.....	73 97	136 16	.....	210 13	.....	3 89	.....	8 76	.....	12 65
Unproclaimed.....	243 81	.....	.....	243 81	36 50	.....	.....	.....	.....	36 50
Prospecting Licenses.....	.....	.....	.....	1217 39	.....	.....	.....	.....	.....	24 83
Total.....	\$3207 27	5345 10	10 00	9779 76	2752 04	232 10	274 65	250 35	144 40	3678 73

Supplementary account of Expenses common to both branches of the Department:—

Stationery and Printing.....	\$1865 39
General Expenses.....	4283 23
Postage.....	127 32
Expenses Gold.....	\$5785 94
“ Coal.....	3678 37
.....	487 08
Total.....	\$9041 39

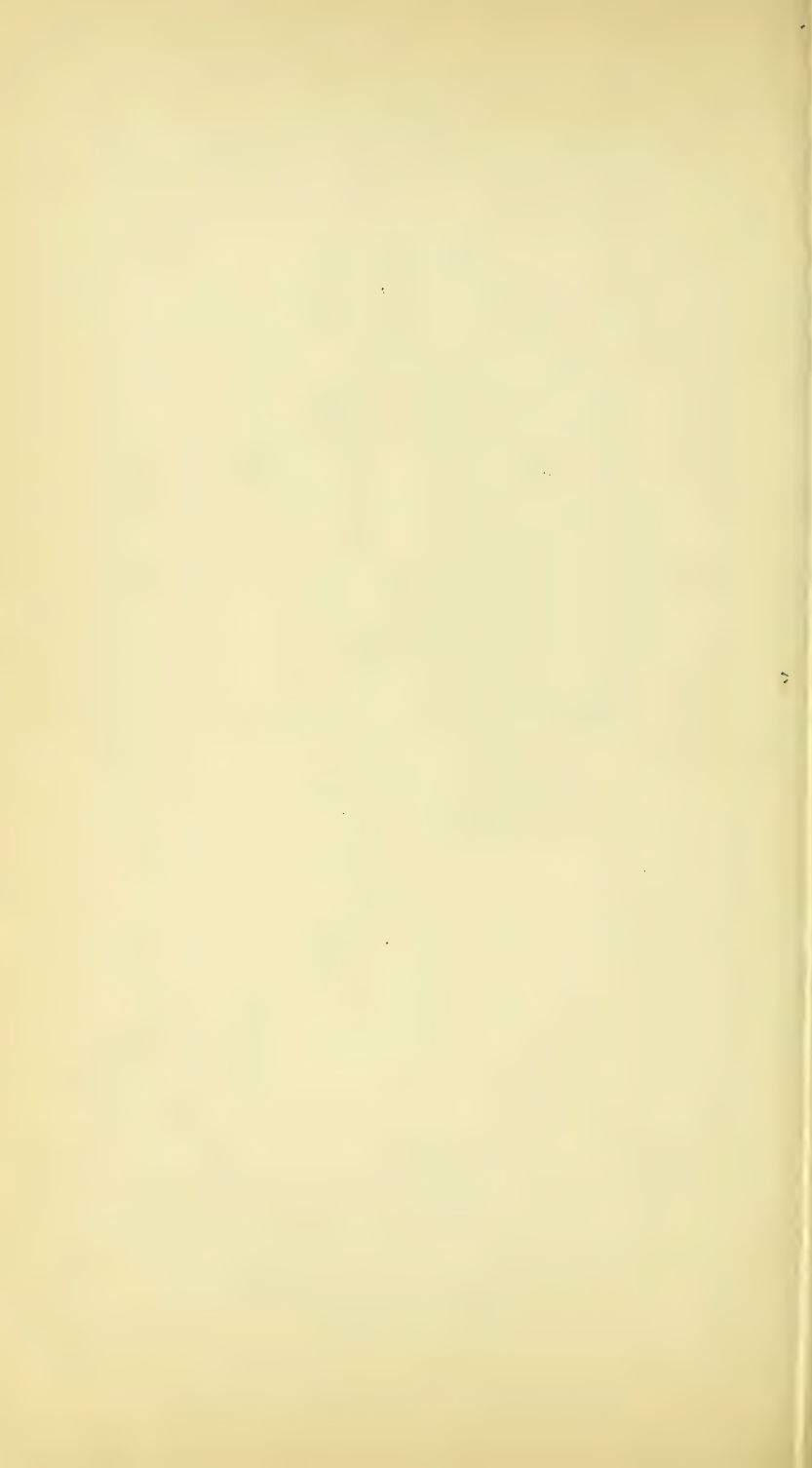
OTHER THAN GOLD.

Mines Department for 12 Months ended December 31st, 1872.

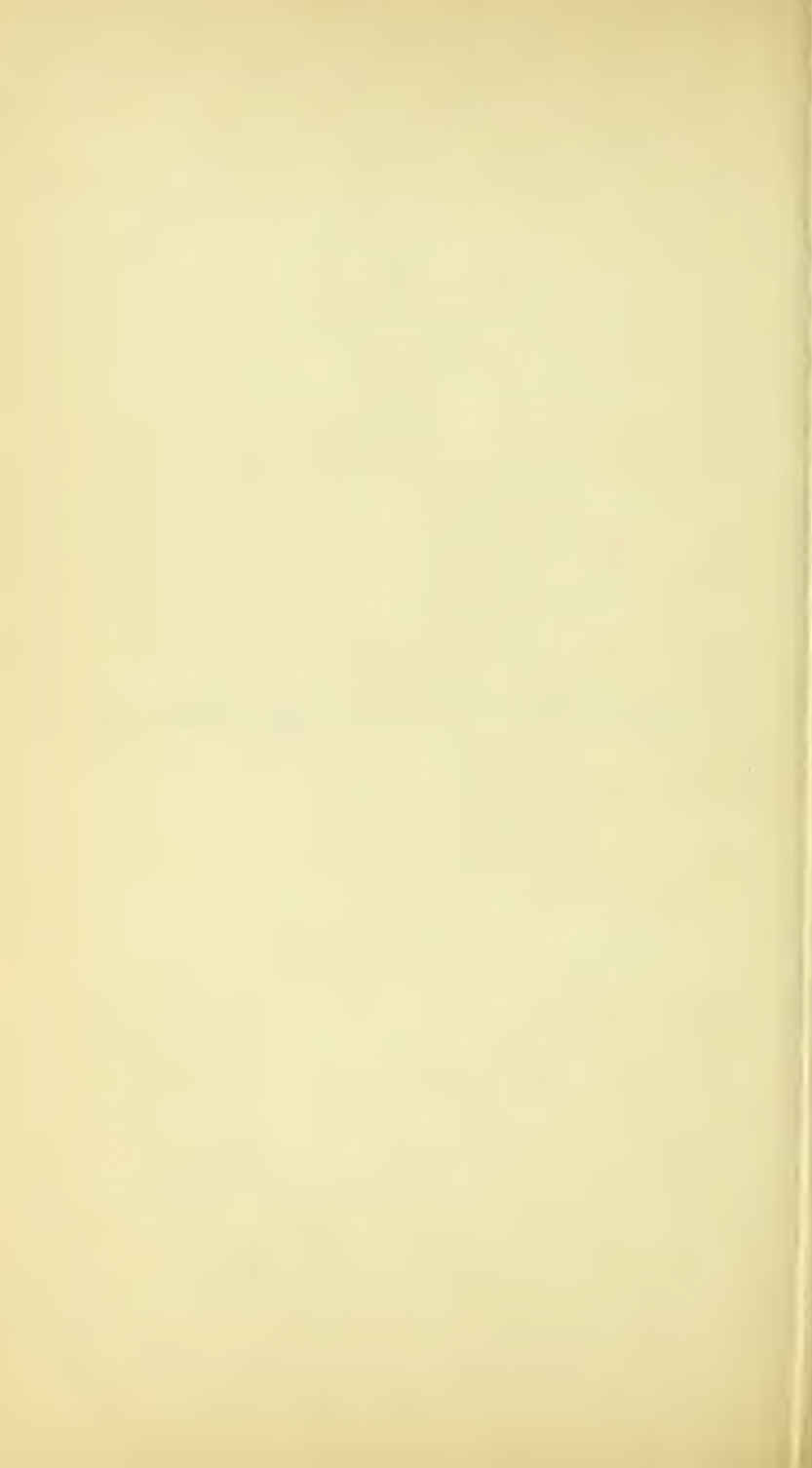
RECEIPTS.

EXPENDITURE.

COUNTIES.	Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Licenses to Search.	Return Licenses to Work.	Surveys.	Totals.
Annapolis	\$19 47	.....	.....	19 47	.....	.....	.....	.....
Antigonish	80 00	.....	.....	80 00	.....	.....	.....	.....
Cumberland	2128 32	1409 04	1230 08	4767 44	20 00	.....	300 00	320 00
Cape Breton	929 06	747 34	33905 27	35581 67	19 47	.....	.....	19 47
Pictou	1429 39	271 01	28851 81	30552 21	39 47	.....	.....	39 47
Inverness	337 35	48 66	.....	386 01	20 00	48 67	.....	68 67
Colchester	338 94	25 00	.....	363 94	20 06	.....	.....	20 00
ings	19 47	.....	.....	19 47	19 47	.....	.....	19 47
Hants	80 00	.....	.....	80 00	.....	.....	.....	.....
Richmond	599 47	125 00	.....	724 47	.....	.....	.....	.....
Victoria	118 94	.....	27 17	146 10	.....	.....	.....	.....
Guysborough	60 00	.....	.....	60 00	.....	.....	.....	.....
Halifax	39 47	.....	.....	39 47	.....	.....	.....	.....
Total	\$6179 88	2626 05	64014 32	72820 25	138 41	48 67	300 00	488 07



PROVINCIAL MUSEUM.



REPORT

ON THE

PROVINCIAL MUSEUM.

PROVINCIAL MUSEUM,

February 6th, 1873.

SIR,—I have the honor to submit the following Report on the Provincial Museum under my charge.

In my Report of last year, I gave the classification of the objects displayed in the Museum, and a description of the more prominent specimens.

In the present Report I propose to notice the principal additions that have since been made, arranging them according to the order I then adopted.

ECONOMIC MINERALS.

A block of Granite from Shelburne, presented by Captain McLean.

A block of Gypsum from Arichat, C. B., presented by Mr. W. Clough.

Two blocks of Limestone from George's River, C.B., presented by Sheriff Bell.

A collection of Cape Breton Marbles.

A collection of specimens of Auriferous Quartz from Isaac's Harbor, presented by the Hon. Wm. Annand.

Iron Ore from Londonderry, Nictaux and Annapolis.

The late Mr. A. P. Ross, of Pictou, presented a large slab of Copper Ore from Tilt Cove and a block of Bituminous Coal from George's Bay in Newfoundland.

To the Department of

SCIENTIFIC MINERALOGY

have been added,—

Asphalt, from the Dead Sea, presented by Mr. H. Bland, Berkshire, England.

ANDALUSITE var. Chiastolite.

Tourmaline.

Tantalite.

Limonite.

Meteoric Iron, from the Desert of Atacama in Bolivia, presented by Mr. H. Bland, Berkshire, England.

Manganite.

Nickel.

Bismuth.

Copper ores.

Silver ore, presented by Mr. H. S. Poole.

GEOLOGY.

To the Rock Collection I have added 122 specimens from George's River, C. B.; Arisaig, and Halifax and its environs, N. S. These were collected during surveys made last Summer. They are principally Crystalline and Sub-crystalline rocks from the Azoic and Lower Silurian Formations.

These are accompanied by maps which they are intended to illustrate.

Prof. Nichols has contributed a collection of Rocks and Minerals from New Brunswick, and Mr. Fletcher a similar collection from Newfoundland.

PALÆONTOLOGY.

A collection of Silurian Fossils from Arisaig.

A collection of Lower Carboniferous Limestone Fossils from N. S. and C. B.

A large collection of Carboniferous Fossils from the North Joggins.

A collection of English Oolitic Fossils presented by Dr. Clay.

Mr. Harris, Artist, P. E. I., presented two large and beautifully executed figures of the *Megatherium* and *Mammoth*.

This Department has been greatly enriched by the generous donation made by Mr. H. Poole, of his valuable collection of Fossils from Nova Scotia, Cape Breton, and other countries.

At the meeting of the Institute of Natural Science, Mr. Poole stated that this collection contained many rare and valuable specimens of Fossils of the Coal Formation, that Mr. Selwyn, Director of the Geological Survey, had solicited the collection to be described by Dr. Dawson among the decades of the survey. Mr. Poole, however, preferred to deposit them in the Museum, where they would be accessible to the members of the Institute and Students of Geology in Nova Scotia. He considered that the Museum in the Capital of the Province whose natural history they tended to illustrate was the proper place of their destination.

In the Botanical Department, the additions made are chiefly foreign.

A fine specimen of Manilla Hemp, presented by Mr. Wm. Stairs.

A section of the Bark of the Mammoth Pine of California, presented by Mr. George Thompson.

The top of a gigantic Reed from the shores of the Dead Sea, presented by Mr. H. Poole.

IN ZOOLOGY.

Human anatomy has had important additions by the presentations of Dr. Page, and the skull of a Mic-Mac, presented by Dr. Weeks.

There have been added to the Mammals,—

The Star-Nosed Mole—*Condylura cristata*.

A fine specimen of the Wild Cat, *Lynx rufus*—male.

The foetus of a Porcupine, *Erethizon dorsatus*, presented by Mr John Dalton.

Porpoise, *Phocena communis*—in a jar.

Mr. Edward Binney presented a noble pair of Ox Horns from the Cape of Good Hope.

Hon. D. Macdonald a noble pair of Moose Antlers from Antigonish.

Mr. Thomas, a White Musquash Skin.

BIRDS.

Mr. Egan presented a fine specimen of the English Raven,

Skin of Emu presented by the Hon. D. Macdonald.

Two Skins of Albatross presented by Captain G. W. Clarke.

A Skin of the Chinese King-Fisher presented by Mr. John Graham Amoy.

In the Class,—

REPTILES

Are *Chelonians*.—The Heart of a Turtle.

The Carapace of a gigantic Turtle, from Porto Rico, presented by Captain Hiorth.

Saurians, Lizards—foreign.

Ophidians, Snakes—Native and foreign

Amphibians, Frogs and Salamanders—Native and foreign.

H. E. Sir Hastings Doyle, Dr. Gilpin, Mr. Poole, and Capt. G. Clarke, were the principal contributors.

In the Class,—

FISHES.

A Young American Angler—*Lophius Americanus*, wet preparation. A Sea Trout—*Salmo Canadensis*, weight $7\frac{1}{2}$ pounds, presented by Mr. Payzant.

Dog Fish, old and young.

Foreign—A very young Flying-Fish and a Sea Horse—*Hippocampus*, presented by Capt. C. H. Campbell.

A very large Cow Fish, presented by Dr. Griffiths, H. M. Royal Alfred.

In the next sub-kingdom—

MOLLUSCA

there are many additions.

Mr. Edward Binney presented a collection of shells containing a large number of specimens.

MOLLUSCOIDA

have also had additions.

The sub-kingdom

ANNULOSA

Has had the addition of a very large *Lobster*, *Crabs*, *Shrimps* and *Parasites* from the mouths of Flying-Fishes, presented by Capt. J. H. Campbell.

Scorpions, *Centipedes*, *Tarantulas*, *Beetles*, from India and Brazil, also *Locusts*, *Butterflies*, and *Moths*.

INSECT ARCHITECTURE.

A beautifully constructed nest of *Mygale Cæmentaria* from California, presented by Mr. George Thompson.

The Sub-kingdom

ANNULOIDA.

A medusa-head Star Fishes, *Asterophyton* from Margaree, C. B., presented by Mr. Grant, Sydney, C. B.

A large and beautiful *Echinus* from Nassau, presented by Lieut.-Colonel Jolliffe, H. M. S. Royal Alfred.

A large collection of *Echinarachnis* from Cole Harbor, presented by Miss Isabella Fairbanks.

A large collection of Star Fishes, large and small, some with 6 rays.

The Sub-kingdom

CŒLEENTERATA.

Corals from the West Indies and a beautiful specimen of *Nulliporea*. Coral from Labrador, lat. 54° N., presented by Mr. J. M. Mackay.

Sertularidæ, various species.

The Sub-kingdom—

PROTOZOA

Sponges from Halifax Harbor, presented by Mr. J. M. Jones.

A very beautiful group of Tubular Sponges attached to a *Spondylus princeps*, taken off Cadiz, presented by Capt. J. H. Campbell.

Abundance of *Foramenifera* attached to *Chiton*, *Sertularidæ*, &c.

The Zoological Collection is now amply sufficient to illustrate any course of lectures on Zoology.

THE ETHNOLOGICAL DEPARTMENT

has received additions.

Two New Zealand War Clubs, presented by the late A. P. Ross, Esq.

A South Sea Island War Club, presented by Capt. Graham, R. A.

A Weapon armed with Sharks Teeth, presented by Mr. E. Binney.

Embroidery, Printing and Carving from China, presented by Mr. John Graham, Amoy.

Feather Tippet from India
Ham.

Three Arabian Horse Shoes, presented
by Mr. H. Poole.

A Mandingo War Cap, presented by Mr. Albert Payne.

Jewish Phylacteries from Poland, and a Needle Gun, presented by Mr. H. S. Poole.

IN THE DEPARTMENT OF ANTIQUITIES

There have been added—Stone Axes, Arrow Heads and a Stone Pipe—the pipe came from River Dennis, C. B. A number of the arrow heads were presented by the late Hon. Wm. Garvie.

A singular specimen is from Newfoundland, T. J. Egan.

From Louisburg Harbor there is the Chain Plate of a French Frigate, presented by Mr. Daniel Cronan.

There is also a Medal struck in commemoration of the taking of Louisburg, having the effigies of Admiral Boscawen, dated 1758, presented by Mr. Hamilton, of New Jersey, a plan of Louisburg, Harbor and Fortifications, dated 1758, presented by the Rev. Dr. Hannan.

Among the curiosities added there is a pistol which belonged to Mr. William Cobbit, M. P., presented by Mr. Ratchford. A picture of the Great Pyramid, presented by His Excellency Sir Hastings Doyle.

IN THE DEPARTMENT OF NUMMISMATOLOGY, &c,

There have been added many Coins, Ancient Roman, Modern European, Asiatic and American—Paper Currency of the Colonies before the Revolution.

A Quebec Assignat of 1758, presented by Mr. Gilbert Seaman, Minutic and Assignats of the French Republic.

There is also an Antique Gem with the figures of Cupid and Aphrodite, found at Jaffa, presented by Mr. H. Poole.

Of Nova Scotia manufacture there is a collection of Axes, presented by Messrs. Bill and McKay, Liverpool.

FINE ARTS.

Two old Italian Paintings, presented by the late Hon. Wm. Garvie, and a Bust of H. R. H. Prince Albert, presented by Stephen & Son. A portrait of His Excellency Sir Hastings Doyle.

NAVAL ARCHITECTURE.

Model of a Ship, presented by Captain Ryerson, M. P. P.

LIBRARY.

A number of volumes have been added.

The Ceremonial copy of Jury Awards of London Exhibition of 1862, presented by A. M. Uniacke, Esq.

Rapport sur L'Exposition Universelle de 1867, at Paris, presented by the Imperial Commission.

Any report of progress that can be made, cannot but fail to convey any adequate idea of the character and extent of our Museum. It must be visited, examined and studied, in order to be adequately appreciated.

It is evident to every one at a glance, that our Museum Collection is large and varied. It requires frequent visits, close examination and varied knowledge to realize its richness.

Yet the Museum is very far from realizing the aims and expectations of its promoters. Greater accommodation will be required for a proper and adequate display of our mineral resources. A proper appreciation of the utility of securing such a display and an honorable fulfillment of promises made to contribute specimens are necessary for the gaining of the object contemplated.

It was also intended to make the Museum a School of Mines. The collections in the Museum are admirably adapted for this purpose. Already public opinion has assented to our view, in reference to the establishment of such an institution, and it requires only the assent of the Legislature to confirm them. Science classes have already been established, and are now in their third session. In the first session there were 8 students; in the second, 11; This session there are 23 students, of these 22 attend the Geological Class, and 23 that of Zoology and Palæontology. In these classes the instruction given is to a large extent special, i. e., relating to Nova Scotia and Cape Breton.

Several of the gentlemen who attended my lectures last session assisted me in field work, especially in my survey of Halifax and its environs.

The Institute of Natural Science continues to hold its meetings in the Museum with mutual benefit to both Institutions and to the cause of Physical Science in Nova Scotia.

The Provincial Museum is no longer a novelty. It is

four years and a half since it was established. Its popularity is still increasing and the influx of visitors is steady. I have no means of ascertaining the number of visitors that have been admitted during the past year. The number has unquestionably been very considerable. Town and country have each contributed their quota, and a great proportion have been strangers.

Assured that you will take as deep an interest in the prosperity and success of our institution as your two predecessors in office.

I have the honor to be,

Your obedient servant,

D. HONEYMAN, D.C.L.

Director.

The Hon. D. Macdonald,

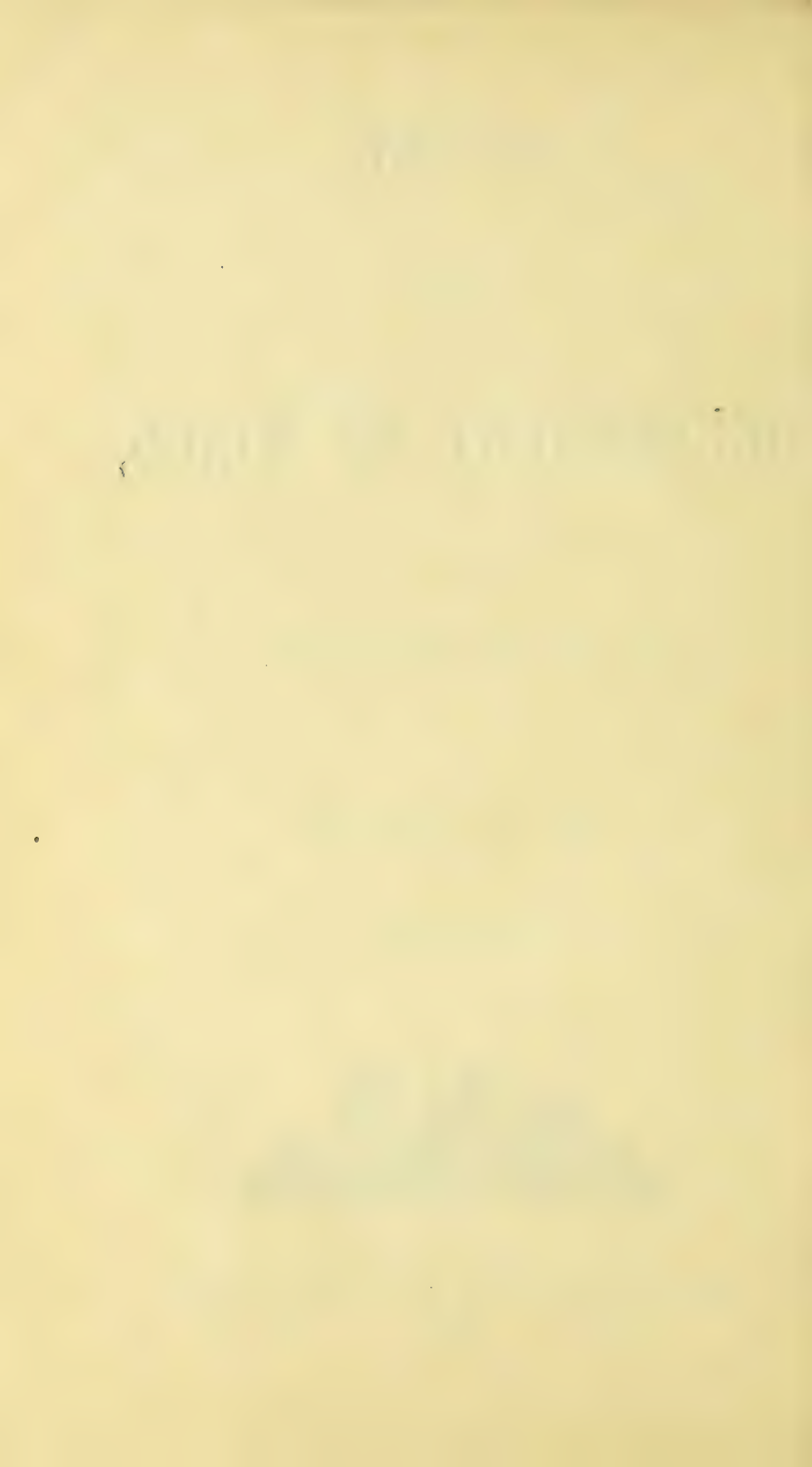
Chief Commissioner of Mines.

REPORT
OF THE
DEPARTMENT OF MINES,
NOVA SCOTIA.

FOR THE YEAR 1873.

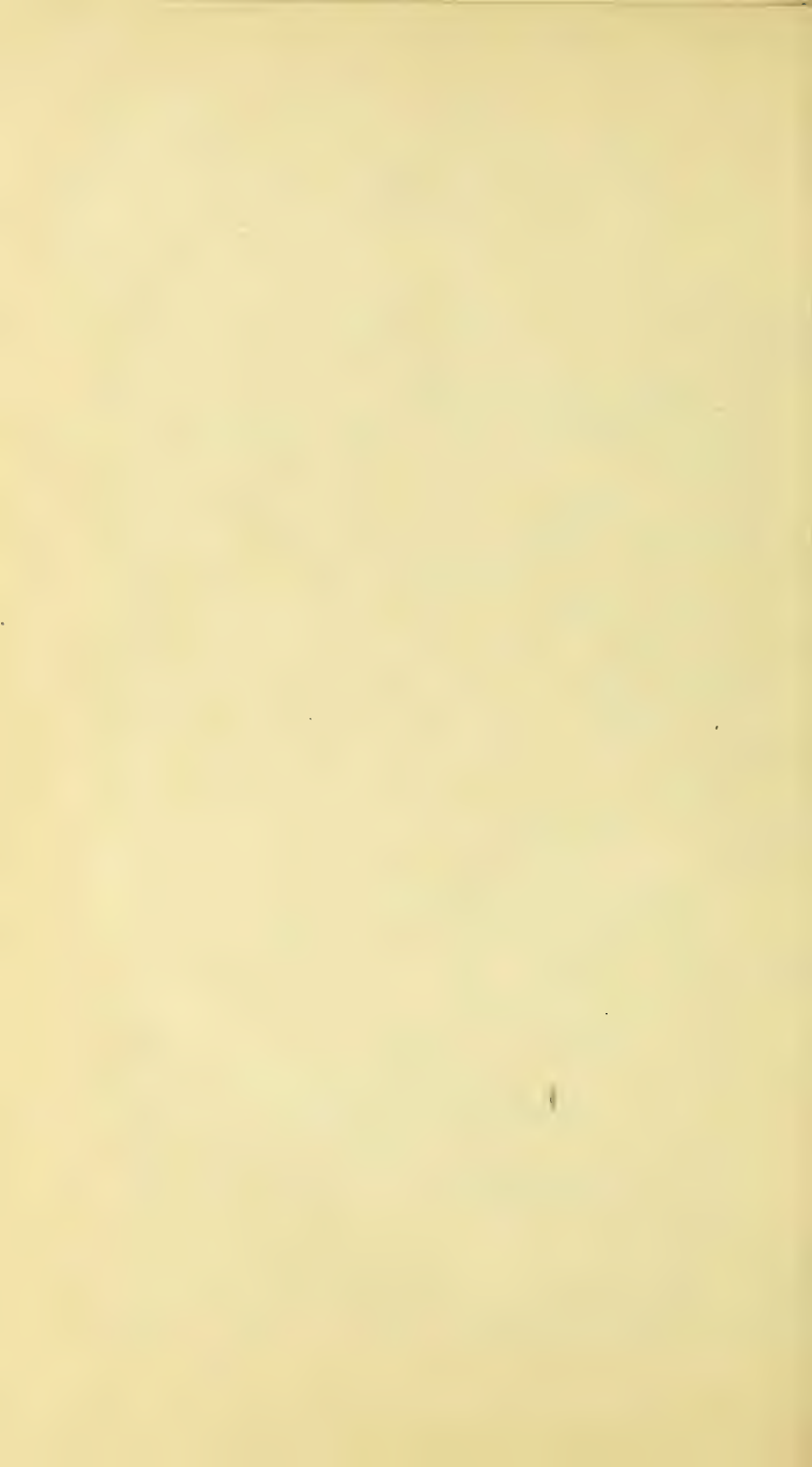


HALIFAX, N. S. :
PRINTED BY THE CITIZEN PUBLISHING COMPANY.
1874.



CONTENTS.

	PAGE.
Introduction.....	2
General Summary.....	3
Prospects.....	3
Prospecting.....	4
Dynamite and Drilling Machines.....	5
Barriers and Plans.....	6
Weighing.....	8
Special Rules.....	11
Certificated Managers.....	13
Coal.—Cumberland County.....	15
Pictou County.....	17
Drummond Colliery.....	20
Cape Breton County.....	24
Inverness County.....	26
Victoria County.....	26
Richmond County.....	27
Hants County.....	27
Guysboro' County.....	28
Gold Mining.....	29
Districts.....	34
Iron Mining.....	35
Copper and other Minerals.....	36
Accidents.....	37
Table of Fatal Accidents.....	39
Drummond Colliery Explosion.....	51
Colliery Accident Fund.....	54
List of Leases and Lessees.....	58
Tables.—Coal. General Statement.....	59
Coal Trade by Counties.....	61
Colliery Production.....	62
Total Production; 1827 to 1873.....	63
Coal Exports (Custom House Reports) Nova Scotia ..	64
“ “ and Imports of United States.....	65
“ “ “ Great Britain.....	66
Colliery labor, average production, &c.....	67
“ Construction account.....	68
Gold—Monthly abstract.....	68
Yearly abstract.....	80
District Returns.....	84
Plaster, Freestone, &c..	85
Department Accounts.....	88
Drummond Colliery Relief Fund.....	



DEPARTMENT OF MINES,
Halifax, January, 31st, 1874.

SIR,—

The undersigned has the honor of forwarding to you the Report of the Inspector of Mines relative to the Mines of Nova Scotia, for the year 1873, for the consideration of His Honor the Lieutenant Governor.

D. MACDONALD,

Commissioner of Public Works & Mines,

Hon. W. B. VAIL,

Provincial Secretary, Halifax.

REPORT
ON THE
INSPECTION OF MINES,
UNDER LEASE FROM THE CROWN.
IN THE
PROVINCE OF NOVA SCOTIA,

For the Year ended 31st December, 1873,— By HENRY S. POOLE, F.G.S.;
ASSOCIATE OF THE ROYAL SCHOOL OF MINES.

HALIFAX, January, 1874.

SIR,—In the following report which I have the honor to transmit, I have added, beside the customary references to the present condition of the mining industry in the Province, certain suggestions for your consideration regarding matters which generally affect the working of Crown property. Most of these are in connexion with the Act for the Regulation of Mines which the Legislature last session enacted to come in force with the present year; and a few bear on the practice of mining in other countries and the recommendation they have for our attention.

Some of the statements hitherto scattered throughout the body of the report are collected in the form of a table and placed in the Appendix. Information respecting the several coal areas held by

lessees, the names of lessees, the names of their agents, the extent of the areas held, &c., is for the first time published. Tables of the coal trade of Great Britain and the United States are also given for comparison, that our exporters may readily see which markets are open to our competition. It will be observed that while the United States export into Canada 428,455 tons they import from us but 264,760 tons. The details of our trade are given in the appended tables, and although the information stated is in a more abstract form than hitherto, I trust it will be found to contain all that is required, and be useful for comparing the extent of the trade with that of other countries.

GENERAL SUMMARY OF THE RETURNS OF THE MINERAL PRODUCE
OF NOVA SCOTIA, RECEIVED BY THE DEPARTMENT OF MINES,
1873.

Number of Mines	Minerals.	Quantities.	Value.
28	Coal.....tons	1,051,467	\$2,699,347
33	Gold (17708 tons quartz,).....oz.	11,852.4	219,270
3	Iron.....tons.	3,485	10,455
	Plaster..... “	120,693	120,693
	Freestone..... “	2,820	34,532
	Moulding Sand..... “	130	260
	Plumbaginous Shale..... “	11	110

The active demand for coal which sprang up in the autumn of 1872 was immediately renewed on the opening of navigation and was maintained until late in the year. Even in August, when there is usually a slackness of trade, the demand remained as great as before and prices continued to rise as contracts previously made became filled. The best qualities of screened coal which a year before were selling, free on board, at \$2 25 per ton with a discount of 10 per cent., sold at the close of the season at \$3.25 to \$3.50 per ton; other varieties of coal, less in demand, at rates ranging downward to \$2.50 per ton. The total produce of the country amounted to 1,051,467 tons, an increase of 170,517 tons over that of the previous year. The trade was increased by 95,198 tons, 12 per cent.; the sales amounting to 881,106 tons. Though still of no grand proportions its comparatively prosperous condition is shown in the following tabular statement.

	Produce.	Sales.	Royalty.
1871.....	Tons 673,242.....	596,416.....	\$52,846.65
1872.....	“ 880,950.....	785,914.....	69,722.69
1873.....	“ 1,051,467....	881,106.....	78,874.36

PROSPECTS.—The prospects for the present year are good, for a ready demand is generally anticipated. Possibly the output may be as much as 1,250,000. It is not likely, however, to exceed this quantity, even if the demand is greater, for the capacity of most of the collieries is limited and cannot readily be expanded without a further outlay, which operators who invested during the dull times and have had to wait so long for dividends, are naturally averse to make. The great demand for coal and the remunerative prices obtained for all the established collieries caused many enquiries to be made by promoters of mining speculations for property in the Province, but up to the present time no scheme that may have been set on foot has yet taken tangible shape. Although the attention of capitalists has been drawn to the undeveloped property of the Crown, they have been largely deterred from embarking in fresh schemes by the heavy expenditure known to have been incurred at many of the existing establishments, where it had been found necessary to supplement the sums of money actually required to develop the mines by large outlays on railways, artificial harbors, and shipping wharves. The country having been to some extent opened up by these expenditures, facilities may now be acquired in certain localities by less pretentious concerns for coal mining on a moderate capital.

PROSPECTING.—Much attention was given during the year to prospecting for all minerals expected to occur in the Province, the labor expended being more particularly directed to the discovery and extension of seams of coal and beds of iron ore. An unusual number of licenses to search and work were taken out, and by the end of the year, with those previously granted and still in force, ground was covered by applications of the various denominations to the following extent: First rights of Search 213; Second, 111; Third, 50; Fourth, 23; Fifth, 7; Licenses to Work, 95; in all covering an area of 1565 square miles. Applications were taken out most numerous in the following named counties in the order of their priority; Cumberland, Pictou, Cape Breton, Inverness, Colchester, Richmond and Antigonish.

What the results of the prospecting, in the several localities mentioned have been, I am but in few cases able to state, as few reports of the explorations were made to the Department as required by the terms of Licenses; in most cases because the licensees have made no discoveries and consider they have no information to transmit, or are 'middlemen' who have done no work; in some, because ignorant of the kind of information required, and in a few, because the licensees fear advantage may be taken by persons holding contiguous areas, of any information they may impart. The value of this last excuse is altogether imaginary, for the rights of licensees are well protected; but to facilitate the making of the required reports of exploration it might be advisable to supply a form of Return to accompany the license.

DYNAMITE.—In the last report reference was made to the advantages accruing in other countries from the use of powerful explosives for blasting, and to the probable benefit to be derived in this by the introduction of dynamite. It was expected that a supply could be obtained from England and a trial made in the gold mines and in colliery sinkings, but on further enquiry it was found that the new regulations respecting its transportation recently issued by the Home Office, threw insuperable obstacles in the way of its importation. The previously existing restrictions were imposed when dynamite was little understood and thought to be akin in its dangerous qualities to nitro-glycerine, and the new regulations were made, it was expected for the purpose of removing instead of augmenting the legal obstructions thrown in the way of its introduction into general use. Instead of doing so they are practically prohibitory of its exportation, and causing, as they do, so much annoyance to the miners and quarrymen using it in England, have produced an outcry which has extracted a half promise that they will shortly be entirely removed. As we must for the present rely on foreign countries for our supply, since the Dualin, a somewhat similar material manufactured in the Dominion, has not so far given satisfaction, it is to be hoped that this will be done. Closely connected with the use of powerful explosives is that of

DRILLING MACHINES.—Abroad a great deal of attention is now

bestowed on the invention of and perfecting machines already invented to substitute for the slow and expensive method of drilling by hand. Much success has already attended the use of rock drilling machines in undertakings of magnitude where time is the great element of consideration. For boring holes to prove the nature of underlying strata the Diamond Drill stands unrivalled, since in its operation it is more expeditious, cheaper and satisfactory than any system yet invented. In the sister Province of New Brunswick two such drills are in use—one owned by the Government exploring for coal at Grand Lake, and the other in the hands of Mr. Bligh searching for the continuation of the celebrated vein of Albertite near Hillsborough. Mr. Bligh has handled his machine with great success as regards the boring, having put down—so far as I can learn—the deepest hole yet made by a drill of this kind. His boring reached a total depth of 1040 feet.

What is now more particularly wanted is a cheap, simple and efficient machine that can be readily applied to the ordinary work of a mine, sinking and drifting. More particularly do we require such an apparatus in our gold mines, where the successful adoption, attended by economy of time and labour, would enable mines now lying idle, or merely paying working expenses, to yield a handsome profit. Many machines invented for this purpose have met with considerable success. For soft bituminous shales the McDermott handborer has been found most serviceable. For border rocks, the McKean and Burleigh Drills have proved efficacious, but will be surpassed, it is expected, by a new borer called the Kainotomon, which lately tested, has received a practical approval in Cornwall. It is described as much simpler and cheaper than any one hitherto brought out, and should it fulfil its promises will augment the facilities for mining which the scarcity of skilled labour now restricts. At the Albion Mines, Montagu, Mr. Lawson has introduced one of Burleigh's drills. He finds it very efficient, but on account of the multiplicity of parts and the inexperience of his workmen in its use, he does not feel warranted at present in purchasing any more.

BARRIERS AND PLANS.—In my report of October 27th, 1873, written in pursuance of the Mines and Minerals chapter, section 5,

I alluded to the troubles consequent on the inaccuracy of the plan of the Acadia Co's pit workings, and the neglect to maintain the barriers of coal reserved between the excavations in adjacent leases. Much of the trouble arose from the disregard paid to the express stipulation in the leases respecting the maintenance of barriers, aggravated by the imperfect state of the plans; and excuses were found in the absence of a precedent showing the value of the stipulation requiring the reservation. The trouble thus occasioned has raised a question regarding the correct position of certain lease lines which has not hitherto been defined by posts or monuments of durable material and of a permanent character. Of these two difficulties the first will be met by the new act, the Mines Regulation Chapter, which requires that correct plans should be kept, and compiled from accurate surveys made at least once in every twelve months. It also indirectly requires data to be taken and kept by which the extent of all the leading places, levels and head-ways can be at intermediate times laid down with approximate accuracy.

The second still requires a remedy; the leases not having hitherto stipulated for the establishment of permanent marks to define beyond cavil the metes and bounds of each area leased. Dispute must be expected, and will without doubt arise whenever the workings of rival companies approach each others' boundaries. To avoid as far as possible disputes arising in the future, many lessees have expressed their anxiety to see some well considered plan, requiring the establishment of such permanent marks defining the boundaries of all leased mining areas, approved by the Legislature. Many of the areas are very irregular in shape and the temporary stakes placed to mark the corners when the original surveys were made cannot always now be found, and unless some uniform system of maintaining undisputed the side lines as originally surveyed, is devised, conflicting interests will sooner or later lead to litigation. I therefore beg to suggest that this subject receive the consideration which it appears to require.

WEIGHING.—When it was proposed to require that all coal on which royalty is payable should be weighed, representations were made by interested parties that the requisition would entail a large outlay on the part of the lessee, and occasion grievous detention when the business was large. By such representations

a wrong impression was produced as to the object of the clauses. The subject seemed to me of sufficient importance to bring it to your notice in my report, and I did so, but briefly, hoping that those interested would acquiesce in the justice of my suggestion and not raise an opposition that might make it necessary to investigate and expose previous shortcomings and inaccuracies. As, however, they thought otherwise, I may, without bringing a direct charge against any one, be more explicit. The terms of the leases distinctly state that the royalty shall be so much per ton, and that ton to weigh 2240 lbs. Several of the companies and their agents accepted the terms literally, and called my attention to the practice of others who did not, as they did, weigh all the coal they sold. Others were in the habit of averaging the quantity and I have no reason to believe otherwise than fairly, while some roughly guessing at the amount, took care to allow a sufficient margin for loss.

It was to put all on the same footing and to do justice to those who, sending accurate returns, considered it but fair to them and the Crown, that all in like positions should be required to weigh all coal paying royalty. It was argued that it was absurd to say that the owners, to save seven or eight dollars royalty, would give away seventy or eighty tons of coal, the impression being that the Quarterly Returns sent to the Department, were made on the quantities actually sold and paid for. Such, however, has not always been the practise, for in some cases the returns have been made by colliery officials who never saw the sales account kept at the head office of the company, it may be, in some principal and distant city. To the company it is of no consequence what amount the colliery charges the head office with, so long as it is under the quantity actually received. The royalty has thus been paid on the total quantities compiled from the several amounts stated on the bills of lading, which in known instances have been 70 tons short on a cargo of 900 tons and 30 tons on a cargo of 400. To the shipmaster as a rule, it matters not what the quantity invoiced be, for the freight is made payable on the amount delivered, his bill of lading being made out so many tons more or less.

Last year I was not in a position to know that any owner or agent had previously sent either intentionally or through negligence

sworn returns which were inaccurate, but I am now prepared to show that the Returns on a large out-put for the year 1872 from one concern were 20 p. c. incorrect; and I have the best authority for stating that the returns of another were not within 5 p. c. of the quantity sold.

As I before remarked, had custom sanctioned a uniform discount which was recognized and acted on by all without any distinction, I should not have regarded the question of so much importance or considered it necessary to do more than report the practice of such discount but as I believe it is one more between lessee and lessee than between the Crown and the lessees. I feel justified in writing thus plainly.

It must be acknowledged that some companies would be put to the additional expense of erecting proper weighing scales, but their complaints of the hardship of complying with this requirement should have little weight when it is due to their own mismanagement that they are unable to comply with the terms of their leases. The objection 'that grievous detention would be caused when the business is large' is one that it appears to me a practical man should hesitate to raise. What is done at a thousand collieries in England and at some of our mines, can surely be also done at every other well regulated colliery in this country. While I am still of opinion that where the business is large every ton should be weighed, I at the same time think it might be advisable to have the following proviso attached to the section. Provided that when the output of any mine to which this section applies is irregular, and written representations are made to the Commissioner that by reason of the temporary character of the arrangements at the mine, or the smallness of the output, the lessee would be subjected to great inconvenience and expense by strictly complying with the provisions of this section, then the Commissioner may, if the Inspector is satisfied that the lessee has adopted a reasonably satisfactory system of estimating the weight of the mineral by measurement or by averaging, grant, if he think fit, an extension of time for complying with the provisions of this section.

SPECIAL RULES —An important decision was recently given in England relative to the liability of colliery owners for the default

of their servants under the Mines Regulation Act, 1872. This decision is of interest to owners and managers in this country, for it turns on the wording of a certain clause of the Act which is identical with a similar clause in the Mines Regulation Chapter of the Revised Statutes of this Province.

One of the General Rules having been broken, an action was brought against the owner, who, it appears had made Special Rules under the Act and had properly appointed subordinates to carry out the provisions of those Rules. After summing up the evidence, the judges stated in their decision:—That the colliery owners, however, are not liable where all ordinary precautions are taken for any negligence, we think, is sufficiently shewn by the last paragraph of the “General Rules” by which it is provided that, “in the event of any contravention or non-compliance with any of the said General Rules in the case of any mine to which this Act applies by any person whomsoever being proved, the owner, agent and manager shall each be guilty of an offence against this Act, *unless he prove that he had taken all reasonable means*, by publishing, and to the best of his power enforcing, the said rules and regulations for the working of the mine to prevent such contravention or non-compliance.” Therefore having employed properly qualified persons to fill certain positions, defined their duties, and enforced in every way the rules and regulations for the working of a colliery, it is evident that the liability of the owner and manager ceases and responsibility rests with those who, by negligence, commit an error interfering in any way with the safety of the workmen.

This decision, exonerating the owner who has made Special Rules, clearly leaves him amenable where he has not done so, and a General Rule is broken by servants on whom no responsibility is made to rest. Hence, the necessity for owners and managers establishing Special Rules in order to relieve their own shoulders of as much of the burden imposed by the Act as the Act will allow, and impose the due share of responsibility on those in subordinate positions in whose hands, to a large extent, rest the safety of their own lives and the lives of the working men.

But fatalities also occur and accidents are caused by the want

of discipline not directly required by the Chapter and not readily made controllable by general rules but easily so by special rules made suitable to the peculiar requirements of the particular colliery they are intended to govern. At the present time, some of our best regulated mines have been alone managed by verbal rules—in some with good effect—but as it is impossible to maintain discipline as strictly as is often advisable on account of the difficulty of imposing or rather of enforcing penalties not legally imposed, the advantages of special rules legally constituted are very apparent.

To instance a case not directly governed by the General Rules of the Chapter, but which occurring in England would have been controlled by Special Rules, I will here notice in detail the occurrence of an accident at the Vale colliery on the 22nd of November.—On the evening of that day, two countrymen, strangers to the mine, appeared on the “bankhead” and asked permission to visit some friends of theirs who were below. It is said that the Banksman demurred at first but finally permitted them to go down. They remained below for some time and on returning were accompanied by one Daniel McDonald, a young man about twenty years of age, who undertook to see them to the surface. On arriving at the bottom of the slope they found the trolley loaded with coal and jumping on it one of them gave the signal to hoist. The trip started and when about 400 feet up the slope—which is very steep—the drawbar bolt broke and the trolley with its load rapidly descended to the bottom. McDonald was instantly killed, Wm. Hendrickson so seriously injured that he died in a few days and Andrew Walsh got his leg broken, and was otherwise injured.

Now it is generally understood in this country and is an established special rule in England, that the Banksmen and Onsetters in charge of shafts and steep inclines are not to allow any person to descend or ascend without permission from the proper authorities, nor to allow any one to ride with full tubs. Here, then, was a manifest breach of good discipline attended by disastrous results, and it appears to me, that this one case alone, is sufficient to show why special rules should be framed to make those in the position of Banksmen and Onsetters, responsible to the extent of their duties.

CERTIFICATED MANAGERS.—The products of the mine being either absolutely or practically limited in quantity, once extracted cannot be reproduced by cultivation as the products of the soil; they should therefore be regarded as property held in trust by the present for the public benefit of this and future generations, and should with watchfulness be protected from waste and lavish consumption. Though there is a natural tendency for all corporations holding but temporary lease of such property to endeavor to reap as speedily as may be the largest present gain, without respecting the true welfare of the property they hold, we cannot yet complain of a lavish expenditure of our mineral products, but we can of wastefulness connected with the management of many undertakings. Without any exaggeration it can be said that large sums of money have been uselessly expended on the developement of our mineral resources while yet the business is comparatively insignificant. In referring to this waste it is not advocated that it could for the future be entirely prevented by the employment of certificated managers, but the advantage to the country and to the lessees of Crown property to be derived from the employment of thoroughly efficient men is only too apparent to capitalists and others familiar with the past history of our mining enterprises.

It has been deemed expedient in this country that the law should interfere and require that the masters and mates in charge of our marine shall be men in whom trust can be placed, men who by practical experience and professional education, are, up to a certain standard, fitted to fill the positions they occupy. If this then has been considered necessary, where the property concerned is not directly owned by the Crown, how much more should some prudent supervision be exercised in the case of our mines, which are ?

In England where the mineral rights are held by private owners the law requires a certificated manager to be in charge of every mine, and although there has been a good deal of doubt expressed as to the thoroughness of the present system of granting certificates there adopted, it is evidently a move in the right direction, and naturally suggests a similar movement in other mining countries. Since the law has been in force and an opportunity given to observe its working, it has been suggested by some of the Prize Essayists writing "On the Prevention of Catastrophes in Mines" that it

would be an improvement were all colliery officials required to possess certificates, not only the manager or chief person in authority, but also that the overmen, deputies, and firemen, should be required to possess certificates of 1st, 2nd or 3rd class according to the positions they hold. There can be no doubt but that men in such positions as deputies and firemen should have that amount of book learning essential for the proper performance of their duties. An efficient fireman should be able to say why fire damp collects near the roof and choke damp near the pavement, and explain how atmospheric changes of temperature and pressure affect mines, and increase or check the outflow of gases from the measures. Few can do so; but were it made compulsory by law that after the lapse of a certain number of years all officials should hold certificates of competency, obtained by passing examinations on mining matters relating to their special duties, we might then hope that great improvements would take place in the safety of our mines.

Certificates of service might be granted to all officials who have held their positions for one year previous to the commencement of the regulation; which certificates should be only of service so long as the holders remained at the mines in which they were at the time of the granting of the certificates.

There are many among the working miners, who, possessed of the requisite natural ability and determination to succeed, would strive to improve their position, by strenuous efforts in their spare hours, did they have before them the inducement to supply their lack of early education, which the opportunity to earn certificates of competency would hold out to them. There are men now holding responsible positions at some of our mines, who have made their way by the determined exercise of their natural energy of character, and the success that has crowned their efforts, should give much weight to any opinion they may form on this subject, and I believe their opinion is generally in favor of such a scheme as is shadowed forth above. While there are few men possessed of the indomitable pluck requisite to induce them to strive against years of discouragement, there are many of natural ability who would, could they work their way by easy stages, gaining well defined positions of advancement as they strove, be induced to improve their leisure time and endeavor to fit themselves for positions of trust and greater emolument. Were such an opportunity given, then would the general standard of education in the mining community be elevated and the moral tone improved.

COAL MINING.

CUMBERLAND COUNTY.

The attention of the public, which for some years has been directed to the coal field of this County, was more effectually called, during the past year, to the many advantages it possesses. The actual produce, though small, was comparatively a large increase, and the active preparations now in progress warrant expectations of a continued proportionate increase for this and future years.

Important additions to our knowledge of the resources of the Spring Hill District have been made. The Black or Eleven feet seam, has been proved to the Westward, to lie in a straight line as far as Miller's Hotel, where it bends somewhat suddenly round to the Southward. The continuation appears to be further deflected until at a distance of about one mile from the Spring Hill Colliery, it, or a seam very similar in character, is found trending still more to the Eastward and with a Southerly dip. Should subsequent explorations prove the correctness of this surmise, and determine the lay of the seam, untroubled by serious faults, a rapid developement of the coal trade in this county may be anticipated. The thirteen feet seam, originally discovered on the General Mining Association's property, has been proved to be an overlying seam, but has not yet been traced beyond the bend.

By these discoveries the prospective value of the contiguous areas owned by Mr. Livesey and others, on which much money has been spent in surface explorations, has been greatly enhanced and stimulus given to further exploration.

In anticipation of the facilities for transit which the trade of this county must require when the collieries now being started are fully developed, and when the output exceeds the local demand

along the line of the Intercolonial Railway, (as it must shortly do) a Company has already begun to build a Railway from Spring Hill to Parrsboro'. By this branch road the mines will be put into communication with tide water at the nearest and most convenient point for shipment, and the operators be enabled to compete in the markets of New England, at present chiefly supplied from Cape Breton. Analyses of the Coal, making it highly bituminous, warrant the expectation that it will be found suitable for gas making, for which purpose about two million tons are annually required in the towns of New England favorably situated for suppliance from the coast. The quantity at present provided for this purpose by Nova Scotia is somewhat under a quarter of a million of tons.

COLLIERIES.

JOGGINS.—The changes made in the system of working and the facilities for increasing the production, mentioned in the last report, enabled this colliery to greatly extend its business during the past season. Two new incline roads worked by counterbalances have facilitated the transportation underground. The system of 'long-wall' adopted in one district of the workings has been proved well adapted to the requirements of the seam and will be extended to other portions of the workings as circumstances allow.

SCOTIA.—The business of this colliery is altogether local and is consequently small. The coal now mined is from the second seam 4' 3" in thickness, and underlying the main seam, which is 2' 9" in thickness, about ten feet. The slope which is 300 feet deep, dips at an angle of 38°

SPRING HILL.—The crop openings used in 1872 for the extraction of coal were abandoned and slopes to the East and West, three quarters of a mile apart have been started. The West slope has been driven some 400 feet and the requisite pumping and winding machinery erected. The engine is a single 16 in cylinder with a 4 feet 6 inch stroke, geared three to one, driving a 9 feet drum. Engines of a heavier class and more permanent character are in course of erection at the East slope, where in future the principal output is expected to be made. The ventilation of the present workings is effected by a furnace 6 feet wide erected at the outcrop. Twenty houses, each of two tenements, have been built for the accommodation of the workmen.

PICTOU COUNTY.

The bright prospects with which the coal trade of this County opened, were early marred by strikes, and later in the spring, the lamentable explosion at the Drummond colliery, destroyed all the hopes of the output exceeding that of the previous year. The falling off amounted to 38,767 tons, and the sale decreased 54,433 tons.

Much attention was given to prospecting, and explorations were extensively made in various parts of the county. At Caribou Island much interest was caused by the discovery of a seam which by the outcrop promised to be some four feet in thickness, but which subsequent operations failed to realize. The seam appears to be faulted and where it is regular, it has not yet been opened. Outside the well known field the explorations were attended with but indifferent success.

A Company has been formed with the intention of proving, if possible, the measures lying north of the New Glasgow Concomerate. A borehole has been put down 500 feet at Sutherland's Point, and shales, very similar in appearance to those of the coal bearing basin to the south, have been reached. The encouragement thus given will, it is hoped, induce the Company to proceed in their investigation and continue the boring for another 500 or 1000 feet. The value of such an undertaking, in the event of its being successful, cannot be over-estimated, for as the measures are regular and but slightly inclined, a large tract of country would with all probability be proved by the one operation.

COLLIERIES.

ALBION MINES.—The General Mining Association have transferred this property with all their rights, leases, and real estate, in the county to the Halifax Company (Limited) who have since carried on the operations under the same management.

In the deep seam worked by the Cage Pit, the engine plane has been extended to a total length of 700 yds., and levels driven from the

bottom to the north and south. An attempt was made to pump the water from the deep by a Cameron pump, the steam for which was conveyed through 1000 yards of naked pipes, but it was found that the pressure reduced from 35 to 8lbs. was not sufficient for the work. Preparations are being made to encase the pipes in some non-conducting material. The ventilation effected by a small furnace amounts to 9,900 cubic feet of air per minute.

In the Main seam worked by the Foord Pit, the north levels have been driven three quarters of a mile; and near the face a pair of stone drifts have been started to the west to intersect the Deap seam, which, it is expected, they will do at a distance of 180 yards. It is proposed in this way to drain and in part work that seam. The Guibal Fan, to which reference was made in a previous report, was put in operation and was found by experiment to give when running at the moderate speed of 47 strokes, 75,000 cubic feet of air per minute, of which quantity 64,400 feet passed through the returns. Shortly after the fan was started, the use of powder was resumed in these workings and the practice initiated in conformity with the new Act. No powder is used in the levels where there is the greater likelihood of feeders of gas being cut, and there the men still use the wedge. On the south side the levels have been driven through the fault, which was ninety feet thick, and a self acting inclined road made to win the rise coal.

The manufacture of Coke has been continued, and the quantity is stated to have been 462 tons. Of late it has been made of dust, the screenings from slack coal.

ACADIA.—Although the sales from this colliery are 13,088 tons behind those of last year, they have not been surpassed by those of any other in the Province. The brunt of the strikes in the spring was borne by this colliery, and work had hardly been renewed when it was again suspended for a time in consequence of the Drummond explosion. The exploitation of the mine has since been much extended and the slopes for a new lift are being driven. The pillar working has been continued and has been followed in places by the subsidence of the surface to the no small anxiety of the inhabitants of Westville. A fourth set of three boilers, of

the same kind as those previously in use has been aided to supply the increased power required as the workings extend to the deep. When tested in the autumn, 29,000 cubic feet of air were found passing over the furnace per minute.

INTERCOLONIAL.—During the early part of the year, this colliery was worked most energetically, and every preparation made to increase the output as rapidly as possible. The exploration of the mine was further increased by driving the main slopes some 300 feet or more to the deep to open out a fourth lift, thus making them about 1750 feet in length. A large stock of coal was banked on the surface and about 7000 tons stowed in the upper workings of the mine. In all, a greater quantity was on hand, than that possessed by any other company when the spring trade opened with every prospect of a successful year's business. Early in May the shipping had already become vigorous, when a strike of the colliers for certain privileges and higher rates of wages closed the workings. After a week's intermission, an agreement was made with the men and they resumed work on the 13th. About noon on that day, a shot fired in one of the low levels on the south side of the pit ignited the coal. Every exertion was made, as detailed in the evidence at the inquest, to put out the fire, but the peculiarly broken condition of the face of the level prevented the men from attacking the flame where the burning gas directly issued in great volume from the solid coal. The fire spread rapidly and as it was soon evident that the chances of subduing it were small, an order was issued that all the hands, who were disinclined to assist at the fire, should leave the pit. Many had previously left, having been driven out of their bords by the smoke. The boys, all except one, had gone up, and of the rest, all but about a dozen men who remained with Richardson, the overman, at the fire, left the lowest landing to walk up the slope. Richardson and his men who so heroically remained to battle with the fire, so long as there was the slightest hope of success, must soon have followed to endeavor to check as speedily as possible the progress of the flames, and save the pit by closing all openings. No attempt to do this was, however, made, for before many of the men who were in the slope had time to escape, an explosion of gas, unexampled on this continent for violence,

occurred, dealing on all sides death and destruction. The sad details are given in the published abstract of the evidence taken at the inquest. The force of the explosion was so great that the wooden rope rollers were torn from their track and hurled out of the slope, as from the mouth of a cannon, falling in the woods some two hundred yards back of the bankhead. Great baulks of timber 14 feet long, by 9 inches through, were cast up out of the Campbell pit to so great a height that on falling, they struck the ground with such force as to fracture them, and the rush of air swept away as would a hurricane the exposed roof of the bankhead. Many explosions took place during the afternoon, and the second occurring about two hours after the first, killed four volunteers who were nobly endeavoring to rescue some men then known to be alive at the bottom of the pumping pit. By the second explosion the ventilation was thoroughly destroyed, and as hopes could no longer be entertained that any life still existed in the mine, all the preparations to explore the workings were then abandoned, and attention alone directed to saving property. The violence and frequency of the explosions struck terror into the hearts of all who rushed to the scene and paralyzed the efforts of those who sought to close the openings. All the available water was turned in to cut off the lower workings, and effectually sealed the bottom of the pumping pit. Still the fire raged, despite every exertion, for 35 hours, and the flames shot up with a fierce roar to the height of from thirty to forty feet from the many openings along the crop. Two days passed before the men engaged in filling the openings had effectually sealed this fiery grave of fifty-five of their comrades.

The workings remained closed until the end of October, when one of the slopes was opened and the air allowed to circulate between it and the opening made by a fall near the rise. At the end of a fortnight and just when appearances seemed to warrant preparations being made to re-open the workings in a regular manner, the return air showed unquestionable signs that the fresh air was finding its way into places where the heat was still sufficiently intense to cause combustion of the coal or the bituminous shales of the roof. In consequence the pit was again closed and remained so up to the end of the year. Preparations are now in progress to make an entry by

No 1 slope, conducting into the mine no more air than is requisite to supply the men working at the end of the brattice, timbering the slope and stopping the crosscuts, in the hope that by leaving the air of the mine undisturbed, the necessary stoppings may be built to cut off the south side where the fire raged most fiercely and enable the north side to be separately re-opened. The prospects of success are most encouraging.

An apparatus, invented by M. Denayrouze called an *ærophore*, has lately attracted much attention in England, and the tests made have proved it to be of practical value for just such service. By its aid, says the inventor, a man, encumbered by no more than 8 or 10 lbs. weight of apparatus, may penetrate at once and to a great distance into a pit filled with choke damp or any other gas, remain there for several hours, carry a lamp with him without danger, and have free use of his arms. The apparatus is of two kinds; a low pressure apparatus, which requires that air should be pumped to the miner through india rubber tubing from the nearest point at which pure air can be found; and the high pressure apparatus, which enables the miner to carry his own supply of fresh air in a receiver, and thus make him independent of communication from without. So satisfactory were the experiments considered, that the apparatus was regarded as invaluable for enabling a miner to explore a working charged with gas or to recover a man who could not otherwise escape, and orders were at once given for several to be kept at the collieries in the neighbourhood of the place where the experiments were made.

To keep up a small business until a new winning can be made, a pit some 70 feet has been sunk to the coal lying to the south of the second fault. Subsequently a slope was started and engine erected to continue the workings to the deep and the coal lying between the faults. A small pit was also opened on the second seam and the coal gives promise of being of marketable quality. The seam yields about ten feet of clean coal.

NOVA SCOTIA.—On the workings of this colliery approaching the southern boundry of the area, several holings were made into the rise workings of the Acadia, so that instead of a solid

barrier of unwrought coal existing, as required by the terms of the leases, to keep the workings distinct, the communications are numerous and the value of the reservation destroyed. A late survey of the surface and workings proves the correctness of the plan of this colliery's workings and exonerates the Company from any liability connected with the destruction of the barrier.

The operations have been of the ordinary character though much extended. Some trouble has been occasioned by the tender nature of the roof, coupled with the high inclination of the seam, and some bords have been lost by 'crushes.' The ventilation is effected by a furnace, over which some 44,000 cubic feet of air pass per minute.

VALE.—The past year was spent in perfecting the arrangements for working on a large scale. No mining was done beyond driving the slopes and the levels when the main slope had reached a total depth of 850 feet. The chief expenditure was on the surface, building dwellings, constructing a railway to New Glasgow, and preparing a shipping wharf at Pictou Landing.

CAPE BRETON COUNTY,

The trade of this County amounted to 520,189 tons, exceeding that of the year before by 37 per cent. The success attending it was attained notwithstanding the serious check received by the hurricane of the 24th August, which, by disabling a large number of vessels and damaging shipping piers, reduced the shipments by at least 25,000 tons below what they would otherwise have been.

COLLIERIES.

SYDNEY.—The detention unfortunately caused in the sinking of the new pits at Lloyd's Cove by the irruption of a heavy feeder of water which necessitated the lining of the shafts with cast iron tubing, has prevented the output from

this colliery being much augmented. The progress lately made in the sinking renders it probable that one of the shafts will reach the seam before the end of the current year, and the new winning be in full operation in 1876. When this is effected, the facilities for production will be greatly increased.

The difficulties attending this enterprise being of an unusual character, at least, hitherto unmet with in this country, the means adopted to overcome them are worthy of note. At the place where the sinking is in progress, the coal is expected to be struck at a depth of 696 feet. To win it, two shafts were started in the year 1867, and the erection of the requisite machinery begun. When the shaft intended for the winding shaft had reached the depth of 267 feet, the heavy feeder of water, which caused the temporary abandonment of work, was struck. Preparations had then to be made to case the shafts and while sinking to pump the water until a water-tight stratum on which to seat the wedging crib of the tubbing was reached. But first an adit was driven through the measures from the seashore, a distance of 516 feet, for the discharge from the pumps. For the pumping, an engine of 240 horse power was erected; the cylinder of which is 62 inches in diameter with a stroke of 9 feet. The cylinder stands over a staple shaft in which, when complete, the upper lift of pumps will be placed, the piston rod projecting through the bottom of the cylinder for the attachment of the spears. For the sinking, a 20 inch set of pumps are used, hung in blocks from the surface. Powerful crabs, seven in all, are in use for putting in and lifting the pumps, spears, cradles, &c.; the main ropes being 14 inches in circumference. The winding engine is a direct acting horizontal engine of 160 horse power, having two cylinders, each 36 inches in diameter with a five foot stroke. The rope drum is 18 feet in diameter. Each engine is supplied with steam from a set of four plain cylindrical boilers 5 feet 6 inches in diameter and 35 feet long, fed with water by a donkey engine of 7 inch cylinder. The flues lead into a chimney 85 feet high.

A jack-engine with two horizontal cylinders 14 inches in diameter, is at present employed in sinking the pumping shaft.

When the sinking of the winding shaft was temporarily abandoned, every preparation was made to continue that of the pumping shaft, and during the past year the water bearing strata were pierced, 300 feet of tubbing inserted, and the feeder in that shaft dammed back. For much of the time the engine had to combat with 650 gallons of water per minute. At the end of the year the pumping shaft stood at a depth of 335 feet, and the staple pit in which work was resumed, on the feeder in the pumping shaft being tubbed back, at 305 feet. In the latter, tubbing is now being put, and it is expected that the whole of the 391 feet of tubbing required will be shortly in place. When this is completed the remaining 70 feet in the staple pit and the 379 feet in the pumping shaft will be resumed dry. To estimate the difficulties connected with such an operation and the detentions occasioned, it must be remembered that all the changing of buckets and clacks has to be done from the top of the shaft, and that very much time is consequently consumed. First the spears have to be raised, disjointed one by one, the bucket changed, or if it be the clack that is done, the 'fish head' attached with which to get hold of the clack, the spears reconnected, and the clack withdrawn, replaced, and the operation repeated with the bucket. Then the pump is again started, and after some hours' pumping the water, which has rapidly accumulated during the changing of the bucket, is removed, and work resumed.

LINGAN.—The working of this colliery was of the ordinary character up to the 1st June, when a fire occurred, and the openings had to be closed. Subsequently an incline road, known as Hall's slope, was opened and some coals were thus obtained, but the business was greatly retarded in consequence of the fire.

The fire is supposed to have originated by a body of gas—ejected perhaps by a fall of the roof—coming in contact with the furnace fire, and causing an explosion which would temporarily reverse the current of air, and occasion the fire which was shortly afterward discovered to be burning in the coal adjoining an underground boiler supplying steam to a

force pump at the deep. In confirmation of this theory, the wooden cupola at the top of the air shaft, was seen suddenly to burst into flame, and then as a reversion of the air took place, the flames for a short time poured down the upcast. The stoker at the underground boiler seeing the flames pour out of the furnace doors, left and went up the slope. The furnace man happened at the time to be getting coal for his fire, and did not see the reversal of the current. The pit was not at work at the time, and no lives were lost. Attempts were made to put out the fire, but they proved ineffectual, and in fear of an explosion the pit was closed. The south side still remains so, although no fear now exists that the fire is still burning.

A new furnace has been erected at the foot of a new upcast 65 feet deep, sunk further to the Northward, where there is a greater natural elevation.

At the Barrasois a small quantity of coal has been mined in the land area.

VICTORIA.—One of Cameron's special steam pumps has been placed half way down the slope to relieve the main set of pumps which it is expected will be shortly required for the further extension of the slopes to the deep.

GARDINER.—The shaft in course of sinking last year has been put down to the coal and levels and headways are being driven to open up the mine. Substantial machinery has been erected. For winding, two horizontal engines, with cylinders 20 inches in diameter and a four feet stroke, directly act on the shaft of the drum which is 8 feet in diameter. For pumping, two of Cameron's steam pumps have been placed below; one with a 14th inch cylinder, 24 inch stroke and 7 inch plunger, the other with a 12 inch cylinder, 12 inch stroke and 6 inch plunger. Steam is supplied by four plain cylindrical boilers 27 feet long and 3 feet 3 inches in diameter. The winding rope is of steel four inches in circumference. The pit tubs adopted are 3 feet 7 inches long, 2 feet deep and 2 feet 10 inches in breadth. The wheels 9½ inches in diameter, and the gauge 2 feet 2 inches.

RESERVE.—The ventilation has been improved by substituting for the fire lamp a furnace which is 5 feet 6 inches wide and 6 feet from the floor to the crown of the arch. To carry off the surface water an adit has been driven from the outcropping of the seam in a depression.

The coal wagons in use on the Glasgow and Cape Breton Co.'s railway were found in practice to be unsuited for the coal and the loading of large vessels at the shipping pier at Sydney. They have been altered and a flat substituted for the pitched floor. To empty them tipping tables have been put at the pier, and they have been found to work satisfactorily. There can be no question but that for tender coals,—and all the coals of Cape Breton require careful handling,—drops and reverse shoots are destructive. Besides the saving of the coal by having it slide directly from the wagons on to the shoots instead of dropping many feet on to the shoots or from a height directly into the hold of the vessel, an advantage is gained by the use of tipping tables and wagons with side or end doors, in that a less elevation above the vessels' deck is required.

Too little attention has been hitherto paid by shippers in Cape Breton to the size of the coal sent to market. Much of it gets broken up and shaken by being so tumbled about, that it suffers much at the ports of discharge with a consequent depreciation in value. The change in the manner of shipping at the pier at Sydney cannot be otherwise than beneficial to the coals passing over the Glasgow and Cape Breton railway.

LORWAY.—The workings at the West Pit in the crop coal of the Lorway seam have been closed, and the sinking of the permanent pits has been discontinued.

EMERY.—This colliery has been opened by the Lorway Co. on a seam overlying the Lorway seam and underlying the Phelan, worked at the neighbouring Reserve Colliery. A slope has been driven and levels won off on both sides. The seam shows 4 feet 9 inches of coal, underlaid by 2 feet 6 inches of fireclay and 1 foot 6 inches of coal.

SCHOONER POND.—On driving the slope down some 600 feet the seam was found to thin down from 8 feet to 4 feet 3 inches, and the dip to flatten from 1 in 10 to 1 in 18. At this point the sinking has been stopped and the workings temporarily abandoned. No doubt the seam will be found further to the deep to resume its old dip and to be of the same thickness as it is to the West, the flattening and thinning being due merely to a local trouble. The seam is the same as that worked at the Emery Colliery, and as it has been variously named the Ross, Spencer and McPhail, names designating seams in the Low Point and Cow Bay sections, it has been thought better to avoid confusion in the future, and to re-name it the Emery.

INTERNATIONAL.—The ventilation of the pit has been brought under control by a furnace six feet in width, built to the rise of the present workings. A planeway is being driven to the deep and bords opened on both sides. The wire rope being worked by an engine on the surface and conducted down the winding shaft to the planeway.

GLACE BAY.—At the Hub pits the operations have been of the customary character. At the Harbor, the pits for the new winning have not yet reached the coal, but the sinking is being steadily prosecuted.

CALEDONIA.—The leading headway has been driven to the crop and a travelling road made of it. A self-acting incline road has been made on the East side, worked by a 4 feet clip drum and a steel wire rope 630 feet long. The dip of the incline is one in twelve. On the surface two eight tenement and four two tenement dwellings have been built.

ONTARIO.—No change has been made in the method of working, and the business remains small.

BLOCKHOUSE.—The business of the colliery suffered severely by the August storm, which damaged the shipping wharf so that for a time only vessels of moderate draft of water could be loaded.

GOWRIE.—A modified system of longwall working has been started in one district of the pit for an experiment. The seam appears well adapted for longwall working pure and simple, and it is expected that the workings in connection with the new pit will be so conducted. A light locomotive has been placed on the railway to replace the horses previously employed. In the mine two self-acting incline roads have been made and found economical.

VICTORIA COUNTY.

NEW CAMPBELLTON Colliery, the only one in the county, was re-opened after lying idle for some five years. The operations have been chiefly directed to restoring the railway buildings and openings to the mine. Some new machinery has been procured for furthering the output of this year.

INVERNESS COUNTY.

CHIMNEY CORNER.—The destruction of the engine house and miners' dwellings by the fire on the 3rd March suddenly brought the operations of this colliery to a standstill. They have not since been resumed.

RICHMOND COUNTY.

Many licenses to search were taken out in this county during the year, and it is said that the Northerly extension of seams, supposed to be identical with those of the Sea Coal Bay, have been proved in several places, but I have no reports to confirm the statement.

HANTS COUNTY.

A small seam about two feet in thickness has been discovered cropping out in the Kennetcook river, and dipping to the South at an angle of 40 degrees. The seam probably belongs to the lowest beds of the coal measures, and although of no present commercial value, may be so as a guide to further explorations, which, as the measures appear much disturbed, must, to have any likelihood of success, be systematically made. At the place of discovery the thickness of the overlying measures can be but a few hundred feet, as rocks of the Lower Carboniferous are seen dipping in a contrary direction on the opposite banks of the river.

GUYSBOROUGH COUNTY.

In this county also there appears to be an outlay patch of the lower coal measures, and at the head of Country Harbaur some thin seams are said to have been found, but no indication of a workable has yet been discovered.

GOLD MINING.

The condition of this branch of the mining industry has maintained much the same position it occupied when reported on last year.

A further decrease in the total yield is noticeable, partially to be accounted for, perhaps, by the general demand for miners throughout the country and the rise in the rates of wages. The Returns from several mines, as those of Lawson at Montagu, Donaldson at Oldham, and the Eldorado Co. at Wine Harbour show highly satisfactory yields.

No changes from those of last year have to be noted in the methods of working the mines, the tribute system being most general. In the last report reference was made to the introduction of this system of mining, by which working miners are enabled to utilize their knowledge and labor to the greatest advantage. It is undoubtedly the best adapted to foster a true mining spirit. As far as possible it should be encouraged, and few official obstructions put in the way of working men willing to venture their labour in mining speculations. At the same time it should not be forgotten that the men of this class are almost always without the capital requisite to open the setts as thoroughly as even they themselves would approve of doing had they adequate means: but for the supply of their immediate necessities they are compelled to extract quartz as speedily as possible, and get some return for their labor. The system, as at present conducted, is only adapted for surface workings and where the water is light. It is attended by this great disadvantage, that the tributers interest in the property they work being merely temporary, they leave the small shafts and slopes imperfectly stowed and secured, in consequence of which rupture of the walls sooner or later taking place allows free access for the infiltration of surface water. This admission of water is not of so much importance when the depth of the workings is shallow, but most serious when great. In most cases it ultimately leads to abandonment, due either to the want of capital necessary to erect pumping apparatus, or because

the expense incurred by pumping becomes insupportable. Unfortunately this country is exceedingly wet and comparatively speaking, level, so that adits for unwatering a district can seldom be resorted to, and pumps have generally to be used. When mines have been abandoned and allowed to fill with water, much expense is entailed on the workers of leads in adjoining areas on account of the water, which finds its way down from the denuded outcrops and through the shattered rock. Were lessees to require proper attention to be paid to the protection of the outcroppings of the leads, either by requiring them to be left unwrought, or the excavated space to be well packed, and the walls kept from falling together, much of this trouble might be avoided. The lessees could make such stipulations with the tributers, and their agent on the ground could see them carried out.

Most of the claims are held in small areas, and while they are so, companies cannot work to advantage. Capital might perchance, however, be profitably invested by being more particularly directed to supplying efficient machinery to do the hoisting and pumping. The leads so drained and made workable being divided into setts and worked by tributers at rates proportionate to the value of the quartz previously extracted from each sett.

DISTRICTS.

STORMONT.—Work was abandoned early in the year and has not yet been resumed. Miners have, however, not yet lost faith in its mines, and look forward to the speedy renewal of operations.

WINE HARBOUR.—The Eldorado company during the greater part of the year, obtained very satisfactory returns from the Plough lead. They are now continuing the sinking, as their endeavors to find the continuation of the lead to the east of the fault proved ineffectual. On the adjoining area, F 4, Mr. McIntosh opened the western extension of the lead, but which on account of the poverty of the quartz he had to abandon. The company also extended the main tunnel until it cut the Mitchell lead 70 feet from the surface. Work was also performed on the Norton and Hattie leads.

The main lead at the Barrasois on the Orient and adjoining properties, areas 2 and 18 Block 6, has been re-opened and worked.

A sample of 32 tons of the best tailings from the Eldorado mill, yielded 1 oz. 13 dwts. 12 grs. of gold and 4 lbs. of mercury, equal to \$34.65, at an expense of \$28.15.

Sherbrooke.—The production of gold in this district was in excess of the previous year. The principal workings being on the Dewar lead in areas 651 and 652 to a depth of 250 feet. The continuation of the lead as far as area 625 has been stripped and as the stopes over this extent have been but imperfectly stowed, a crushing in of the hanging walls, and free admittance of much water, resulted. The lead where it is worked, underlies areas 621, 622, 623, and 652. Mining on this lead was, for a time in the autumn stopped, owing to the destruction of the engine house by fire.

Mining on the leads of the New York and Sherbrooke Company's property was abandoned in August, after four years continuous operation. The main shaft on the South lead, which starts in area 641, enters a depth 20 feet area 611 about midway between the side lines, and terminates at a depth of 300 feet. The stopes on the west side being 25 feet deeper than the shaft, while those on the east are not so deep. The north lead was abandoned when the shaft attained a total depth of 250 feet.

On the Hayden and Derby property, the adjoining area to the south, the lead discovered and opened the year before by Mr. West, was steadily worked, and the stopes, which he carried down 150 feet in width have reached a depth of 90 feet.

The tributers who the previous year took the Palmerston property, continued to work the lead then opened in area 747 and other parties have worked its extension in areas 749 and 750. The lead thus worked is very irregular in thickness often swelling out in the 'rolls' to two feet in width.

Other tributers worked on the Stryker lead, area 751, and on the adjoining properties to the east, the Canada and Caledonia, with various success.

HARRIGAN COVE.—Operations were here abandoned early in the year, and although the prospecting had given fair promise of success, the renewal of work has been indefinitely postponed. At Shear's Point, nothing further has been done.

FIFTEEN MILE STREAM.—Attention was again directed to this locality, and the tributers who worked are reported to be satisfied with their prospects. They are preparing to erect milling and pumping machinery.

TANGIER.—Mr. Forrest continues to be the principal operator in this district. His tribute right on the Tangier Company's property terminating, he ceased working the South lead when the shaft had reached a depth of a 100 feet and the stopes a width of 500 feet, the Little South lead at the depth of 60 feet with stopes 200 feet wide, and the North lead when at a depth of 35 feet. The latter is 80 feet distant from the South lead, and this last from the Little South lead 16 feet, on the small claims numbered 100 to 179.

Some slight excitement was produced in the summer by tributers on the Field lead near the river, striking a rich piece of ground. After the mine had been opened on areas 72 to 84, to a depth of 60 feet and on a length of 200 feet, work was suspended for the winter. The promises held out by this lead induced others to prospect on its continuation across the river, and favorable surface indications were met with.

The Strawberry Hill Company in the beginning of the year sank the main shaft some 12 feet deeper, or to a total depth of 164 feet. The lead, only about one inch thick, yielded nearly one ounce of gold to the ton of quartz, but not sufficient to warrant a continuation of the sinking. They then did some surface prospecting, and drove a tunnel across the leads some 62 feet, but proved nothing satisfactory. Work was then abandoned on the Hill until the autumn, when tributers took Froud's property and discovered a new lead 7 inches thick on areas 233 to 235. They were fortunate in striking the lead, as the 'throw' was fully one hundred feet to the south. So promising does this new lead appear that other parties are opening the extension of the lead

on areas 231 and 232. At Mooseland, Mr. Irving continues to work the same ground he had opened the previous year.

GAY'S RIVER.—Mr. McDonald has continued his drift to the deep, following the line of Junction of the slates and conglomerate and removing the softer material in immediate contact with the bed-rock, throws into the waste the large boulders that compose the greater part of the deposit. A large quantity of material has consequently to be handled for the moderate yield obtained.

WAVERLEY.—Messrs. DeWolfe abandoned all work early in the spring. In the autumn the property containing the Union lead was let to tributers, who worked it to a small extent.

The tributers who last year took the American Hill property from Mr. McClure, continued to work steadily. They sank the main shaft to the depth of 230 feet, and on the top of the hill erected a pumping engine.

Other tributers took hold of Wilson's areas on Laidlaw's hill and drove a tunnel to drain and work the well known barrel quartz of that locality.

OLDHAM.—Early in the season Mr. Shaffier ceased to work on the Richey lead and that with the mines in the adjoining properties have since remained unwrought.

Some tributers opened the Hall lead and for some time worked with success. Their operations were, however, but of a temporary character.

Mr. Donaldson increased his facilities for extraction by the erection of a 10 inch cylinder horizontal engine as a substitute for the small portable engine previously used. The engine drives by wooden friction gearing the winding drum and also two $3\frac{1}{2}$ inch pumps. Much water has to be contended with as the rock is open and the surface very swampy. The main pumping shaft has been sank to a depth of 130 feet. Three new drawing shafts have been put down to the west and the exploitation in that direction continued by a tunnel driven under some 20 feet of cover. In working to the west and to the deep, the land has been found to thicken from one to five inches and the quartz to be enriched; yielding 4.17 instead of 1.16 oz. per ton.

MONTAGU.—Mr. Lawson, with his customary vigor, has continued sinking the Albion main shaft in the hopes of again striking a shoot of rich quartz. He has now reached a depth of 300 feet, but has not yet struck paying ground. The mining to the west of the barren ground has proved profitable, and it is the extension of this shoot in an oblique direction that will, it is expected, be struck in the main shaft. In the mill he has adopted the use of blankets, which, if they do not collect more amalgam than the plates, aid, at least, in collecting the auriferous pyrites; and as the pyrites are rich in gold, prove of value.

RENFREW.—Mr. McClure trenched some new ground in the eastern section of this district and exposed numerous leads, but none of which did he find promising.

UNIACKE.—A few tributaries worked in several places about the district, but with no great success.

IRON MINING.

Neither of the established iron works were kept fully employed. The Intercolonial Iron and Steel Co. reduced their production pending the transfer of their property to a new company who, it is expected, will erect furnaces on a part of the estate adjacent to the Intercolonial Railway where coal and coke can be readily obtained from the collieries of Spring Hill and Pictou.

The Annapolis Iron Works at Clementsport were again started, and the furnace run for some six weeks. The ore used is taken from the Potter and Miller Mines, and is mixed with a certain per centage of bog ore from Bloomfield.

The following table shows the production of ore and pig metal at both establishments :

Iron Works.	Men.	Ore mined.	Ore smelted.	Pig metal.
Acadia	26	2947	2091	1046
Annapolis	16	538	630	180
Total.....	42	3485	2721	1226

In the Pictou Iron field further prospecting was made near Springville, and the bed of Blanchard ore traced in an irregular course to the river. The limonite deposits by the river were also to some extent proved to be continuous. No preparations, however, have yet been made to mine these ores which undoubtedly exist in great quantities.

The explorations on the Indian Reserve near Whycocomagh proved, it is reported, the bed of ore to be about 15 feet in thickness for a distance of 1000 feet.

Other prospecting for iron ore has been made on the strike of the Londonderry vein toward Five Islands, and in strata of the same age back of Cheverie where ore, like that of Londonderry, is said to have been discovered.

The Nictaux beds still remain unworked.

LEAD.

Attention was again turned to the deposits near Gay's River, but the explorations as far as made did not prove of value. Galena is also known to occur near Stewiacke, Arichat, Sydney and Baddeck. A peculiar deposit is met with near Arisaig. Fragments of calamites with the tissue infiltrated with galena and iron pyrites are found on the outcropping of a sandstone bed, from the denudation of which, doubtless, the metalliferous fossil plants have been derived.

COPPER.

Much interest was again taken in the search for copper ore near Polson's Lake, and in following up the 'float' a large fragment from the vein was struck, which at first was supposed to be part of the outcrop. On discovering the mistake, the explorations were for the time stopped, although it might naturally be surmised that the vein is not far distant. The depth of surface soil greatly retards the work of exploration.

PLASTER, FREESTONE, &c.

One of the appended tables shows the Plaster trade for the past two years and the increase that has taken place in the quantity shipped and the value of the material. This industry is becoming of more and more importance.

The quantities of freestone, &c., noticed, do not represent the total trade of the country in these minerals, but only of the ports mentioned. It would be of general interest to know what the whole quarry business is, and owners are solicited to send information respecting it to the Department.

ACCIDENTS.

The year 1873 will be ever memorable in the history of our coal mining as the one wherein occurred the first serious disaster, occasioned by an explosion of gas, resulting in greater destruction of life and property than any similar occurrence that ever happened in any mine in America.

I have thought it sufficient this year to publish the list of fatal accidents only, and merely to mention that besides those which resulted in the death of seventy-three men, twenty-four accidents were reported as having caused the maiming or injuring of thirty-one other persons.

In the following tabular statement the relative position which the mines of Nova Scotia bear to those of England and Pennsylvania is shown. Comparatively it is unsatisfactory even when the averages are computed without taking into account the loss of life occasioned by the Drummond explosion. It shows the indubitable necessity for greater attention being paid to the subject; more especially since it has been demonstrated that care has much improved the condition of English mines:

	England. 1872.	Pennsylvania. 1872.	Nova Scotia. 1873.
Produce in Tons - - - -	123,393,853	18,929,263	1,051,467
Persons employed - - -	418,088	70,000	4,362
Fatal accidents - - - -	894	- - -	13
Lives lost - - - - -	1,060	222	73
<i>Averages :</i>			
Persons emp d per accident	468	- - -	315
“ “ “ life lost	394	315	59
Tons raised per accident -	138,024	- -	80,882
“ “ “ life lost -	116,409	80,762	14,403

TABLE OF FATAL ACCIDENTS.

No.	Date.	Name.	Colliery.	Cause.
1	March 15....	John Taylor.....	Vale.....	Fall with tub in Slope.
2	" 29....	Alexander Ryan.....	Lingan.....	Fall of coal.
3	May 5.....	William Andrews.....	Gowrie.....	Fall of coal.
4	" 13.....	{ John Dunn and 59 others. (See Appended list.)	Intercolonial. } (Drummond)	Explosion of gas.
5	July 16.....	John Neville.....	International.....	Crushed by train.
6	" 18.....	William Turnbull.....	Vale.....	Fall of derrick.
7	August 14...	Joseph McLean.....	International.....	Crushed by train.
8	" 29....	Donald McKinnon.....	Albion Mines.....	Fall of coal.
9	October 23 ..	Charles Martell.....	Caledonia.....	Crushed by wagons.
10	" 28....	James Kingou.....	Acadia.....	Fall of coal.
11	November 1 ..	John Downie.....	International.....	Run over by train.
12	" 22	{ Daniel McDonald..... } William Hendricken.....	Vale.....	Crushed tubs in slope.
13	" 27	Malcom McIsaac.....	Albion Mines.....	Crushed by back balance.

*LIST OF LIVES LOST BY THE DRUMMOND COLLIERY
EXPLOSION ON THE 13th MAY, 1873.*

MARRIED.—James Dunn, *manager*; Joseph Richardson, *overman*; John Bowens, *deputy*; John Bennett, George Burney, John Campbell, Colin C. Chisholm, James Dalling, Robert Dunbar, John Dunn, Philip Dunn, John T. Elliott,* John Ellis, John Emery, Henry Freeman, Hugh Gillis, Samuel Hale, John McElvie, Sr., Hugh McGillivray, Hugh McDonald, David McNeil, John McNeil, Jr., James McPherson, Jr., James Ramsay, Angus Smith, and John Walton, *miners*; Roderick McCharles, *carpenter*; Andrew Collin, *volunteer fireman*; Edward Burns, Thomas Glenwright and Abraham Guy, *volunteer miners*.

SINGLE.—Timothy Howatt, *volunteer*; Archibald Cameron, Kenneth Cameron, Harvey Campbell, William Elliott, John Fraser, Duncan Halliday, Matthew Lyall, John Manning, Daniel J. McDonald, Duncan McDonald, John McDonald No. 1, John McDonald No. 2, Colin McDonald, John McElvie, Jr., Oliver McLeod, John McRichey, Duncan McRae, Alexander Murray, Nicholas O'Brien, Alexander Purvis, Jr., William Rodgers, Edward Ruddick, Donald Shaw, John Sinclair, D. McFarlane Stewart, George Stewart, and James Webb, *miners*; Edward Jones, *boy*.

CAUSES OF ACCIDENTS AND LIVES LOST.

Explosions of gas, 60; falls of coal, 4; falls in slopes, 3; crushed on surface railways, 4; miscellaneous, 2; total 73.

EXPLOSIONS OF GAS.

Accident No. 4. It is my painful duty to record under this head the occurrence of a lamentable disaster at the Drummond Colliery of the Intercolonial Co. on the 13th May. In a previous part of the report reference is made to the condition of the mine at the time of the accident. The following is a summary of the evidence recorded by the Coroner, as deduced at the inquest on the body of John Dunn, a miner.

DRUMMOND COLLIERY EXPLOSION.

Inquest, held at Westville on Wednesday and Thursday, May 14th and 15th, 1873, before the Coroner Dr. Johnstone, and a jury of 12 persons. Mr. Poole, the Government Inspector of Mines, was present, and Mr. Rutherford watched the proceedings on behalf of the owners of the colliery.

The Coroner.—Addressing the Inspector:—"I have secured the services of Mr. J. W. Carmichael as foreman of the jury, and although two or three of the jurymen are in positions that would prevent them serving, were the Mines Regulation Act now in force, I think you will find them honest men who will faithfully do their duty." No objection being raised, the Coroner called

Thomas Lowther, who said: "I am the overman at the Black Diamond Colliery worked by the Nova Scotia Company. While sitting at dinner on the 13th inst. I heard the noise of a slight explosion. Being told by one of our men that an explosion had taken place at the Drummond Colliery, I proceeded to the scene of the disaster and about one o'clock entered the mouth of No. 1 slope. When I got down about 100 feet I found the stopping in the heading into No. 2 slope blown out and the smoke so thick that I returned, got some brattice, and with six other men again went down. While at work we heard the groans of men further down the slope. We pushed on, got hold of one man, but were so overpowered by the smoke that we had to leave him, and with difficulty made our way to the surface. Shortly after we got up she blasted the second time."

Alexander Lorimer.—"I am night fireman at the Drummond Colliery. My duty is to see in the evening, when I go down, that the men have left no fire in their bords, to examine the state of the mine before the men come down in the morning, and to meet the men at the cabin and give those of them safety lamps whose places require their use. I have been night watchman for about 10 months and am well acquainted with gas, having been brought up in old country mines where there was a good deal of gas. On the 12th May, I went down the mine between six and seven in the evening and examined all the places. In several

bords I found gas lying, as was not unusual, and I informed the men, as I always did, who worked in those bords, and gave them their 'sulphur' lamps. The mine was in as good order as usual that night, and during the short time that the strike lasted the ordinary ventilation was maintained and no gas allowed to accumulate. In the morning I found a little gas lying in the lowest level on the Southside, but not any in McLeod's (the adjoining level above) where the brattice was within 15 feet of the face. Boards with the word 'danger' painted on them are put in all unsafe places not in use, and strange workmen (new hands) are forbidden to enter the bords unless miners are with them. I have known men burned in consequence of disobeying this regulation. After the explosion occurred I returned to the mine and went down the pumping pit about two o'clock, having heard cries for help, and assisted John Bennet to the surface. James Hunter, who went down with me and remained at the bottom, came up in the next tub, bringing John Dunn who was very badly burnt. Edward Burns then went down with Timothy Howatt, and was in the act of coming up to report on the condition of the bottom of the pit when the second explosion caught him and hurled him to the surface, dead. I was unable to get quite to the bottom of the pit, as rubbish filled it up above the door heads. I helped Bennet clamber up among the timber."

James Dunstan.—"I am a cutter, and I went to work on the morning of the 13th inst. after an intermission of a few days. My bord is one of the upper bords of the lowest lift on the South side. Between 11 and 12 o'clock I got word that McLeod's level was on fire and that all hands were required to assist in putting it out. I went at once to the face of McLeod's level and helped to work at the fire, by throwing water and beating at the flame with wet bags, but we could do little as the smoke soon sickened us. We tried again, but were soon driven back. Joe Richardson then came and ordered all who were unwilling to assist any further to leave the pit. He at the same time led about twelve men through the lodgment into the low level to get at the fire from the main intake. Others of us rushed into the level and rescued three men who had fallen overpowered by the smoke, when Joe, who had come out to get breath, told us who remained to 'try and get those men out.' Joe went back to the fire and

I waited at the mouth of the lodgment to help men up when they came out to take breath. Mr. Dunn then came along and asked where Joe was. I said, he has just returned into the level. Mr. Dunn said no more but left immediately for the slope. Just then she blasted. I threw myself down in a gutter and crawled to the lodgment, as I found I could not stand in the baffling air. When things became more quiet I made my way toward No. 1 slope, but found No. 2 choked with rubbish. The door leading into No. 1 slope I could not open; hearing some one speak on the other side I called out, but received no answer. Nearly exhausted I made my way back to the lodgment and called up the pumping pit. A tub was lowered to me and I went up. The air at the bottom of the pit was good. If men had immediately obeyed the order, that all who could give no assistance should leave, they would have had plenty of time to escape, as, I believe, the alarm was given to all hands. We are given about five pounds of powder at a time, and have to go to bank for more when required. As far as I am aware the pit was well ventilated, and to the best of my knowledge Joe Richardson always exercised great care in the management of the pit."

Robert McLeod.—"I went to work on the morning of the 13th inst., in the main level, No. 2 slope. The night fireman told me, as I was going in, that there were about 15 inches of gas in my place. (Lorimer said that he did not find any.) I found only six inches, and that on the high side. The brattice being close, there was less than usual. During the morning I fired two shots in the fall, and neither set fire to the gas. At about a quarter to twelve, I fired a shot in the bench on the low side. It did not blow well and the gas caught fire. We battled with the fire for about fifteen minutes, and had then to retire for fresh air. When we endeavored to return, we could not for the smoke. Joe Richardson, who then came along, said he would go in by way of the lodgment. We went with him and found the fire had caught the brattice. Joe sent me back to tell the man to start the pump, but who could not for the smoke. I returned, and was again sent out to send for Mr. Dunn. I did so by some boys going up in the rake and Mr. Dunn came down when the same rake returned. Joe, who had by this time got back to the lodgment, told me to call the men who were inside, (*i. e.* working on the north side), 'as it

was a lost case.' I did so, and started immediately up the No. 1 slope. At the bottom, I met Mr. Dunn going in, and I told him I feared the pit was gone. When within 200 feet of the mouth, I felt her suck, (the air draw down), and throwing myself down, caught hold of the rail and so resisted the force of the blast. Some of the men ahead of me, were blown away by the blast. One of the men, I know, was my brother who was lost. I was assisted out by a man who came out of the No. 1 top landing."

In answer to the Inspector. "I always tried, as well as on this particular occasion, with my safety lamp, whether there was any lying gas, before I fired a shot. The gas has frequently caught fire from a fall shot, but only once before from a shot in the bench. I never had a shot to operate as the last shot did, that is, blow the coal in the back of the bench and not lift the front from the pavement. Had I been able to shovel away the coal from the face, I could have easily put out the fire. As the pit had been standing there was less water than usual in the barrels, but I have little doubt that the barrels would have been filled in the course of the day. (See A. McLeod's evidence.) About two months previously, Joe said there must be no more powder used in my level, as the day before the low level had caught fire from a shot. I replied, "that I would not work there then." He then told me to go on using it as he had no authority to say that I should be paid extra for wedging. I did not consider it unsafe to use powder, and I never said anything to Mr. Dunn on the use of powder in my level. In the low level powder was prohibited, and in both levels safety lamps were alone used. Before I left the level the first time smoke was backing down against the air."

In answer to Mr. Rutherford. "I have been employed in the Drummond mine, with the exception of sixteen months, ever since it commenced operations. I am perfectly acquainted with the use of the safety lamp as indicating gas, and have alone used it since my brother Andrew has worked with me. In my opinion, Richardson was a very careful man about the mine."

Andrew McLeod.—"I am a brother of Robert McLeod and was employed by him as his loader. We went down the pit about

half-past six on Tuesday morning, and the fireman handed me a sulphur lamp. We never worked with naked lights. On firing the third shot that morning the place took fire. All three of us worked hard for over a quarter of an hour, we then called for help. Two men came, I think Alexander Purvis was one of them. I was soon done out, and in a little while, as they could not succeed, we all went out to the landing. There were two barrels of water not far from the face, one full and the other half-full; there was also a sump with plenty of water, about 100 yards from the face. The only time that our level caught fire, since I have been working, was about six weeks ago when my brother put the fire out himself with his shirt. As I came away, I heard Joe direct to have all the men and horses out at once. I travelled up No. 1 slope and had just reached the mouth when the explosion occurred and I was knocked down."

This witness being young and inexperienced, was unable to give satisfactory replies to many questions put to him.

George McPherson.—"I am a coal cutter. I was working at the time of the explosion in the old top landing, No. 1 slope. There was nothing wrong with our bord, nor did we observe anything unusual when we went to work. We heard no alarm, and the first intimation we had that anything was wrong was the first blast which threw us down and put out our lights. We lit our lights and made our way along the top level to No. 1 slope. We found the timber torn away in the slope, the track smashed up, and the air very bad. Much smoke and heat made it hard to get along. We passed one man, whom I did not know, lying dead. Immediately afterwards the smoke cleared away and I saw a man a bit above us who proved to be R. McLeod. He was lying down and unable to rise. I helped him up the remainder of the way, my comrade being unable to give him any assistance!"

Adam Lorimer.—"I was at work on the morning of the 13th inst., as a coal cutter, in a bord in the lower lift workings on the north side. One of the deputies, Jack Bowens, ordered us to help to carry water to put out the fire which had kindled in McLeod's level. We went immediately and at the mouth of the landing of No. 1 slope, we met about 30 men who were standing talking. They allowed that the pit was on fire and that it was

useless our going in. My brother and I then turned back to our bord to get our clothes. We told some men we met that the pit was on fire and all were warned to leave. Just as we reached our bord, she blasted, and we were knocked down but were uninjured. We found our way without lights up the gin-slant to the middle level and out on to the middle landing of No. 1 where we found the slope obstructed with tubs and rubbish. Crawling over the rubbish we came upon a number of men lying about, unable to walk, crying and groaning. We stumbled over some of them, but said nothing to them as we with difficulty made our way in the bad air. I think the men we passed were those we left talking at the lower landing when we turned back for our clothes. My brother helped me up the slope to nearly the top when he too became exhausted. I, finding I could go no further, said, 'Go, save yourself if you can and send me help.' Help came, and I was the last man to leave the slope, alive.

Edward Small.—"I was a shiftman at the Drummond colliery, and at noon on the 13th inst., was on my way to the furnace to eat my dinner, when I met Purvis and D. McNeil, who told me to return as McLeod's level was on fire. Purvis gave me two safety lamps and I went down. At the pumping pit we passed 20 men standing; we went through the door but could not get far as there was too much smoke. The brattice was then on fire. Bowens came along and told us to come round by the lodgment and get to the fire that way. We went back and met Richardson who said, 'Men follow me.' Joe (Richardson) sent me to the surface for more bags and buckets. I went and was prepared to go down again, when two other men came up and said, I was to help them take off the upper length of pipe in the pumping pit that the water falling back might increase the current of air. We took it off and called down to start the pump (a Cameron steam pump) but received no answer from below. Just then the explosion took place.

John Lorimer.—"I am a coal cutter at the Vale Colliery. Previous to three weeks ago I worked at the Drummond and in the low level, next McLeod's. For the last month before I left I did not use powder but before that I did. I was prohibited from using it because it set the place on fire every time a shot was fired. I

at the same time said I would not be responsible for using it, and the overman told me not to use it. I made less wages after I had ceased to use powder, being paid by the shift instead of by the yard I left because they would not give me the rate per yard that I asked. I considered McLeod's place was as dangerous a place to use powder in as my place was. When I stopped working the faces of both places were about square to one another. Sometimes I had much trouble in putting out fire after a shot, sometimes I wastwenty to twenty five minutes. I had been the deputy overman three and a half years, but differed with Richardson and took the picks about two years ago. To speak candidly, I was fond of a glass."

By Mr. Rutherford.—“I consider the pit was well managed, There was always plenty of water and appliances provided for putting out fire. The sump was in the upper level but was handy for both levels.”

Samuel B. Coxon.—“I am a Mining engineer of the County of Durham, England, one of the Directors of the Halifax Company who have lately taken possession of the Albion Mines I believe I have as large an experience in mining operations as any man in England. I arrived at the Drummond Colliery about 2 p. m. on the 13th inst. and found dense volumes of smoke issuing from the natural exits of the mine, precluding the possibility of saving life by means of those exits. Hearing that cries for help had been heard from the pumping pit, Mr. Hudson and I went there. On our arrival we found one man, (James Dunstan) being hauled up in a bucket by manual power. After which, other two were drawn up. Then four volunteers descended to prepare the way for larger gangs of men to search for any who might yet be alive in the mine. Mr. Hudson and I had determined to explore the pit with the hopes of saving life, and were waiting for our safety lamps and the report of the volunteer Burns as to the state of the bottom of the pit, when, as Burns was being drawn up, one of the most terrific explosions I have ever seen took place, casting up the man and the bucket and overthrowing the gin and parts about the pit. The plan of the workings which we were studying at the time, was torn in our hands by the

falling debris. After witnessing this explosion and the subsequent ones, I became convinced that every soul in the mine was lost, and to pursue further investigation in the mine was utterly useless. I then consulted with the other mining engineers present, as to the best and quickest mode of recovering the bodies, extinguishing the fire, and saving property. We, with one consent, determined to inundate the mine, which we attempted to accomplish by diverting the neighbouring brooks and applying every available volume of water. After further consultation, it was determined, that the most effectual means of checking the fire, was by closing all the downcast approaches to the mine which carried air to the flames. This we commenced to do after telegraphing to the Government Inspector of Mines for his authority. I have heard the previous evidence and am led to believe that the third shot fired by McLeod must have set fire to a heavy feeder of gas. As I never was in the mine, I cannot say that it was not safe to use powder in McLeods level. I think that the provisions of the new Mining Act, with regard to the use of powder, are not more stringent than has hitherto been the practice in the North of England, where a properly authorized person fires the shots, and he alone; he having first examined the place and adjacent places with a safety lamp."

Much of the above evidence was given in reply to questions put by the Inspector and the Foreman of the jury

The jury after a short deliberation, rendered the following verdict:—"That the said John Dunn, came to his death on the 13th inst., from an explosion of gas, in the Drummond Colliery, caused by the derangement of the ventilation of the mine arising from a fire in Robert McLeod's level. We consider care was exhibited in the working of the mine; but we desire to express our regret that powder was permitted to be used in the level worked by Robert McLeod.

As the verdict states, it is truly to be regretted that the use of powder was permitted in the level worked by Robert McLeod. There cannot be a doubt but that the use of powder was the primary cause of the explosion, and the evidence, which is wonderfully full and complete, considering the magni-

tude of the disaster, leaves little room for doubt but that the direct cause was either the ignorance or carelessness of the miners who were working in the level at the time. While we now know that the risk run by the use of powder was exceedingly great, it must be remembered when considering on whose shoulders rests the blame of the occurrence, that its use is general throughout the Province, except in the Foord pit, where the danger is peculiar on account of the liability of cutting heavy feeders of gas; further, the use of powder lessened the cost of production to the Company, and was not only not objected to, but required by the miners; and above all, there was then an *entire absence of legal prohibition*.

It should be also borne in mind, that competition had previously been sharp, prices low, and at the time the minds of the colliers were disturbed by the condition of the trade in England, and the high rate of wages there ruling. In short there was every inducement for so energetic a manager as the late Mr. Dunn to suppress any prudential fears he may have entertained, and run risks which he hoped by care and attention to divert from leading to serious accidents. The evidence at the inquest goes to show that the general arrangements for conducting the system of working adopted, were good, and although doubts on some points seem to have been held by Richardson, it would be manifestly unjust to impute either rashness, want of skill or care on the part of the manager because the use of powder was permitted. He was well aware that the mine was fiery and required exceptional care in its management, and while his arrangements were prepared to meet all ordinary contingencies arising from the proper use of powder, they could not be for its gross misuse in the hands of workman presumably skilful: men of whose good judgment on the occasion in question grave doubts may to say the least be entertained. To me it appears evident that through carelessness or a desire to save labour either the bench was not properly sheared on the low side, or the line of least resistance was misjudged and the hole for the shot bored too far from the face of the bench, Had it been otherwise the bench would have been lifted from the pavement and the coal so shaken that it could readily have been removed

and a direct attack made on the place where the gas issued from the solid coal. McLeod in his evidence states that:—
 “The gas has frequently caught fire from a fall shot but only once before from a shot in the bench. I never had a shot to operate as the last shot did, that is, blow the coal in the back of the bench and not lift it from the pavement, Had I been able to shovel away the coal from the face I could have easily put out the fire.”

The cause of the fire has been clearly shown by the evidence but what caused the untimely explosion? I am led to believe from the following reasons that the seat of the first explosion must have been to the rise of the middle level on the south side. The blast out of No. 2 slope was of double the force of that out of No. 1. To the deep, where the fire originated, Dunstan came out alive and little injured, and several of the men working at the fire, also must have made their way to the bottom of the pumping pit after the first explosion. While from the north side two pairs of men, from the extreme rise and extreme deep workings escaped unhurt. For some time before the explosion occurred smoke was seen coming out of No. 2 slope, and when the fire in McLeods level got strong the men working at it noticed that the air backed down into the level. It would therefore seem that No. 2 slope acted as the upcast from the fire, possibly by a door having been left open, and the pumping pit as the downcast; while the furnace was supplied with air by the overcast from the north side. This would cause the ventilation of the middle and rise workings on the south side to be checked and afford an opportunity for the accumulation of gas and the formation of an inflammable mixture, which, at length coming in contact with the furnace fire, would cause the first explosion. The second and subsequent ones were the natural consequences of the first. The first explosion having blown out the stoppings, the direction of the air current would be no longer controlled to course the workings and dilute the fire dump generated at the face; and the gas again accumulating, at length come in contact with the fire, and cause the second explosion. The concussion would extinguish the flame where the coal was not set on fire, and explosion would follow explosion until the flame spread throughout the workings and ignited every feeder of gas. The quantity of which given off must have

been enormous to produce such terrific explosions so rapidly, and even the ordinary current of air, had it existed, after sweeping the faces on the south side would have been vitiated to a great extent. The quantity of air ordinarily circulating would probably amount to 20,000 feet per minute.

Several minor explosions occurred during the year which resulted in the burning of one or more men on each occasion; all happily unattended by fatal results. These explosions occurred at the Acadia, Caledonia, Lingan, Vale and Victoria Collieries, and were, according to the reports, due without exception, to individual carelessness or laxity of discipline, and on no occasion to sudden outbursts of gas or unaccountable causes.

In my last annual report I mentioned the reluctance shown by some agents to send to the Department reports on accidents. This reluctance is still noticeable, and I have had on several occasions to remind agents that it has been customary hitherto to send forward such reports. All my applications for information regarding particular cases met with a ready response on all except one occasion, when no notice was taken of my written request. A subsequent conversation with the agent led to an explanation of his course, and it appeared that knowing he could not be made to suffer for his refusal, the new Mines Regulation Chapter not being then in force, he considered he was justified in ignoring my right to make the application, and in declining to acknowledge in writing that gas had been allowed to accumulate during working hours in his mine to the peril of the workmen engaged therein. Or, in other words, to allow it to be supposed that the ventilation and discipline of his mine were not quite perfect. There is a natural desire on the part of agents having a professional reputation to maintain, to keep secret all delinquencies or occurrences likely to reflect on their credit. The knowledge that hereafter every failure from compliance with the spirit of the Act will be made public will, I trust, induce all in responsible positions to strive to fulfil its requirements. I am convinced that in this country accidents of this class are, except in rare cases, quite inexcusable, and that a little increased care will reduce them to a minimum.

EXPLOSIONS OF POWDER.

Happily of the accidents reported to have injured some six men by explosions of powder, none terminated fatally, although some of the men wounded were severely burnt. At the Albion gold mine, Montagu, a charge that had missed fire exploded when an attempt to draw it was made and seriously injured two men. The attempt to unram a charge that has missed fire is now interdicted by the Mines Regulation Act, and subjects the transgressor to penalty.

At the Caledonia Colliery an accident resulted from the use of an iron stemmer to ram the first part of the tamping, by which the unfortunate miner lost his eyesight, beside suffering severe burns about the face. The mining law of Great Britain does not permit the use of iron stemmers for this purpose.

FALLS OF COAL.

The fatalities of this class were of the usual character and immediately arose from the oversight or negligence of the men who themselves suffered; due either from failure to sustain or pull down loose coal while working about it. Seven accidents were reported, four of which terminated fatally: Nos. 2, 3, 8 and 10. No. 2 Alexander Ryan was completing a holing, cutting away the "bridge" or "stump" as it is sometimes called, a piece of coal left to the last to support the overhanging mass, when the whole block came away suddenly and killed him instantly. On examination of the place a 'slip' was seen to run directly behind the mass which fell. No. 3 was a like occurrence at the Gowrie Mines. Had it been a rule of the collieries where these accidents happened that sprags must be used when finishing a holing, these casualties would probably not have occurred. But rules unless acted on are of little worth, as exemplified by No. 10, which resulted also from neglect to use sprags when holing as required at the mine where the accident happened. No. 8 is reported to have followed after a distinct warning of danger and instruction had been given respecting the timbering of the roof.

ACCIDENTS IN SHAFTS AND SLOPES.

Two non-fatal accidents were reported to have occurred in the sinking of shafts. Two fatal in slopes. No. 1, is supposed to have been in consequence of the man who was killed, pushing the tub beyond the mouth of the level and falling with it into the slope.

No. 12 was a much more serious accident which took place in the same mine on the 22nd November. Two strangers were admitted into the Vale slope without leave, and when attended by an irresponsible person met with the misadventure narrated in a previous paragraph headed, 'Special Rules.'

SURFACE ACCIDENTS.

The International Co. were singularly unfortunate in that three accidents, Nos. 5, 7, and 11, resulting fatally, occurred on their railway from Bridgeport to Sydney, from men falling off the train while in motion. No. 9 happened at Port Caledonia. Some full wagons getting started on an incline struck some empties, on one of which stood Charles Martell, a man long accustomed to the shunting of the wagons on the wharf, but who on the occasion in question failed to notice the impending collision. On the wagons striking, the empties jumped and the buffers overriding, he was crushed as the wagons came together.

MISCELLANEOUS.

No. 13. The only fatal casualty remaining to be noticed, resulted from the inattention of McIsaac, who in crossing the plane way when working, was struck by the travelling counterbalance and killed.

Two accidents unattended by fatal results were caused by moving tubs underground.

COLLIERY ACCIDENT FUND.—After an occurrence, such as that

at the Drummond, when the slaughter is wholesale, the sympathies of the people at large are with the families of the sufferers, and contributions of money are freely made for their relief. But when a single fatality occurs, and most of those which happen occur singly, the public attention is not drawn to the trials suddenly imposed on the widow and orphans and to their need of assistance. Beyond the temporary aid afforded by a local subscription, the care of her support is left entirely to her relations, who, most probably, are ill able to bear the additional expense. This system of alms giving is manifestly unfair, and tends to blunt the natural pride of a people accustomed to fairly earn their daily bread.

While still the recollection of the terrible disaster is fresh in the minds of our mining people, I desire to point out to them a system of relief that has been proposed in England, and partly carried out in South Staffordshire; which is, that each district should establish a district permanent insurance fund for the relief of sufferers by colliery accidents. The scheme adopted supplies the required aid as the payment of a just claim and not as a gift of charity. Consequently it meets with the approval of all classes interested and might surely be with advantage introduced into this province, where the inevitable law of averages has shown that a proportionate number of fatalities are here, as well as elsewhere, incidental to the growth of the coal trade.

It is proposed that each miner should make a weekly payment of say 1½d., and each proprietor one farthing per ton on the coal sold. The proceeds of a fund so raised would, supposing the hitherto average rate of mortality is maintained, give to every widow, for a period of ten years, a weekly sum of 6s. 6d., and to each child 2s. 6d. per week.

The Central Committee appointed for disbursing the funds collected for the relief of the sufferers by the Drummond explosion, adopted the following scale for the present relief: To each widow \$1.50 per week, and \$1.00 per week to each child; girls under 15 and boys under 13 years of age.

Special grants were made of \$200 to each widow of the four volunteers who were killed, and testimonials of the value of \$50 given to each of the three surviving volunteers. With some of those who had claims on the Fund, they commuted, and altogether had expended by the end of the year about \$8,800. There are now on the list for relief 27 of the 31 widows, and 80 of the 94 orphans, 4 fathers and 5 mothers left in distress by the explosion.

An abstract account of the subscriptions made for the Fund will be found published with the tables accompanying this report.

I have the honor to be,

Sir,

Your obedient servant,

HENRY S. POOLE.

The Hon. DANIEL MACDONALD,
Commissioner of Public Works and Mines.

LIST OF COAL LEASES IN THE PROVINCE.

No.	Lessee.	Colliery.	Area. Sq'r Miles.		Agent and Manager.
1	McKinnon et al.....	ANTIGONISH COUNTY.	3	Not working.	
12	Cumberland Coal Mining Co'	CUMBERLAND COUNTY.	4	"	
13,14,15	C. H. M. Black.....	"	3	"	
	General Mining Association.	"	4	"	
	Joggins Coal Mining Co.....	"	2	working.	{ Alex. Barnhill.
	Joggins C'l Mining Association	Joggins	2	not working.	{ Robt. Redpath.
11	Lawrence Company.....	"	1	"	
5	Lawson Company.....	Maccan	1	"	
1,2,3,4	New York and Acadia Com'y	Scotia.....	4	working.	William Bennett.
6,7,8	Spring Hill Mining Comp'y	Spring Hill.....	3	"	William Hall.
9	Victoria Coal Mining Comp'y....	"	2	not working.	
		PICTOU COUNTY.			
1	Acadia Coal Company.....	Fraser.....	1	not working	Jesse Hoyt.
3	"	Acadia.....	1	working.	
19,21,22	"	"	4	not working.	{ S. Cunard & Co.
	Halifax Company, [Limited.]	Albion.....	4	working.	{ James Hudson.
11	R. G. Habburton.....	"	1	not working.	
13,14	Intercolonial Company.....	"	2	"	

12	Intercolonial Company.....	Drummond	1	working.	James Simpson.
6	Lewis R. Kirby.....	.....	1	not working.	
15	Merigomish Co.....	.....	1	"	
10	Montreal and Pictou Co .....	.....	1	"	
23	Sir Hugh Allan, Kt... ..	Vale	3	working.	John P. Lawson.
25	Nova Scotia Co.....	Black Diamond.....	4	"	W. W. White.
20	D. E. Price et al.....	.....	2	not working.	
24	M. H. Richey. ....	.....	1	"	
		CAPE BRETON 'OUNTY.			
2	Thomas D. Archibald.....	Gowrie.....	1	working.	Blowers Archibald.
3	Blowers Archibald.....	"	1	"	
25	Thos. D. Archibald.....	Balmoral.....	1	not working.	
5,28	Block House Mining Co.....	Blockhouse... ..	2	working.	Robert Belloni.
29	" (sea area).....	.....	1	not working.	
15	Caledonia C. & R. Co.....	Caledonia	1	working.	David McKeen.
31	" (sea area).....	.....	1	not working.	
30	Alexander Campbell.....	.....	1	"	
44,45	Halifax Coal & Iron Co.....	Ontario	1 1/3	working.	John Sutherland.
46	P. Collins.....	.....	1	not working.	
66	Gardiner C. M. Co.....	Gardiner.....	2	working.	Wm. Routledge.
	General Mining Association.	Bridgeport.	2	not working.	{ John Rutherford.
	" "	Sydney.....	5	working.	{ Richard H. Brown.
	" "	.....	12	not working.	

LIST OF COAL LEASES IN THE PROVINCE. (Continued.)

27	Gen'l M'ng Ass'n (sea area)	Sydney.....	5	Working.	Richard H. Brown.
39	"	Lingan.....	10	"	Donald Lynk.
	"	(sea area)	5	"	
38	"	(sea area)	4	not working	
4,12,16	Glac Bay Co.....	Little Glac Bay.....	5	"	{ E. P. Archbold,
6,13,18,19	International C. & R. Co.,..	International.....	3	working.	{ Henry Mitchell,
22	R. J. & J. L. Ingraham.....		4	"	R. N. McDonald.
64,65	Lorway C. Company.....	Lorway.....	1	not working.	
68	"		2	working.	Albert J. Hill.
69	"	Emery.....	1	"	
10,21	J. Matheson ..		2	not working.	
47	McInnes & LeCras.....		1	"	
52,53	Hugh McLeod.....		2	"	
49	Gl'w & C.B.(N.S.) C. & R. Co	Reserve.....	1	working.	{ James Harvie,
40,41,42	H. E. Ross et al.....	Pt. Aconi.....	3	not working.	{ George Scott,
14,24	Schooner Pond Coal Co.....	Schooner Pond.....	2	working.	James Harvie,
43	Schooner Pond Coal Co.....	Schooner Pond.....	1	not working.	
54 to 63	South Head Co.....	South Head.....	10	"	
67	Sydney C M'g. Co. (sea areas)		1	"	
32	Weatherbe & Kirby... ..		3	"	
34,35,36	Wm. Sword (sea area).....		5	working.	Joseph Salter.
50,51	Victoria Co. (sea area).....	Victoria.....	2	not working.	
	" " (sea area).....				

LIST OF COAL LEASES IN THE PROVINCE. Continued.

		INVERNESS COUNTY.			
5	John Evans Fredk'. Aylmer	Cape Mabon.....	2	Not working.	
4	Cape Breton Coal Min'g Co..	Port Hood.....	1	"	
10	E. D. Tremain, (<i>sea area</i>)...	.....	1	"	
11	Wm. J. Peppett.....	Broad Cove.....	1	"	
6	H. E. Ross, et al, (<i>sea area</i>)	.....	1	"	
7	" "	.....	1	"	
8	Thomas Evans.....	Chimney Corner.....	1	"	
9	" " (<i>sea area</i>).....	.....	1	"	
RICHMOND COUNTY.					
2	A. E. Marmaud.....	Little River.....	1	Not working.	
VICTORIA COUNTY,					
2	Charles J. Campbell.....	New Campbellton ...	3	working.	Lewis E. Tremain.
3,4	William Ross.....	.....	4	not working.	
Total area under lease.....			177 square miles.		

COAL.—GENERAL STATEMENT.

1873.	Produce.	Sales.	Colliery Consumption*
1st Quarter.....Tons.	217.327	38.231	26.366
2nd " "	238.242	188.392	25.551
3rd " "	307.954	414.434	25.850
4th " "	287.944	240.049	30.631
Total.....	1.051.467	881.106	108.398
1872.....	880.950	785.914	110.341

N. B.—Stocks on hand at the end of the year, 106.000 Tons.

COAL SALES.

Markets.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year
	Tons.	Tons.	Tons.	Tons.	Tons.
Quebec	70.161	107.940	8.958	187.059	
New Brunswick	128	14.515	25.958	27.616	68.217
Newfoundland	1.994	12 195	22.332	19.340	55.861
P. E. Island.....	3.767	13.755	9.318	26.840	
Nova Scotia....					
" Land Sales	22.422	8.010	7.891	22.639	60.962
" Seaborne..	4.349	28.905	60.006	61.073	154.333
United States...	893	41.536	159.813	62.518	264.760
West Indies.....	8.445	7.911	11.930	25.927	54.213
Great Britain...	1.392	3.677	1.907	6.976	
South America.		1.132	753	1,885	
Total.....	38.231	188.392	414.434	240.049	881.106

COAL TRADE BY COUNTIES.

Table A.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1873.								
1st Quarter.....	3,841	3,319	84,541	20,985	128,561	13,927	384	.....
2nd Quarter.....	6,834	6,044	77,296	71,650	155,112	110,698	.....	.....
3rd Quarter.....	7,307	7,472	110,823	150,355	189,739	256,601	85	6
4th Quarter.....	9,610	9,510	111,289	90,994	165,673	138,963	372	582
Total.....	27,592	26,345	383,949	333,984	639,085	520,189	841	588
1872.....	15,750	14,153	422,716	388,417	437,326	380,274	5,158	3,070

COAL TRADE BY COUNTIES.

Table B.

MARKET.	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.	
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Nova Scotia—Land sales.	6653	229	39033	10177	3194	1670	6	.....
Sea borne.	954	22	53096	7861	86536	5362	452	50
Great Britain.....	.....	.....	.....	.....	6976	.....	.....	.....
New Brunswick.....	16337	2150	14348	2771	32395	216	.....	.....
Newfoundland.....	.....	.....	1642	78	53867	274	.....	.....
Prince Edward Island.....	.....	.....	6170	15908	4103	604	.....	50
Quebec.....	.....	.....	99239	7577	79001	1212	30	.....
South America.....	.....	.....	753	.....	1132	.....	.....	.....
United States.....	.....	.....	49042	7971	201177	6570	.....	.....
West Indies.....	.....	.....	18318	.....	35895	.....	.....	.....
Total.....	23944	2401	281641	52343	504281	15908	488	100

Collieries.	Seams.	Produce.	Sales		Per Centage.	Colliery Consumption.		Per Centage.
			Bearing Royalty.	Free*.		Engines.	Workmen.	
		Tons.	Tons.	Tons.	Total.	Tons	Tons	
Cumberland County.								
Joggins	Joggins Main.....	19226	17117	19241	19241	189	189	4
Scotia.....	.....	1562	1297	79	1376	290	30	14
Spring Hill.....	Black.....	6704	5530	198	5728	129	354	7
Pictou County.								
Acadia.....	Acadia.....	112308	95568	14407	109975	2979	1654	4
Albion Mines	{ Deep.....	43890 }	89680	17573	107253	18922	6385	17
Intercolonial	{ Main.....	97024 }	30347	6277	36624	1252	4189	13
Mitchell & Co.	McBean.....	418	267	76	343	.....	31	8
Nova Scotia.....	Acadia.....	85008	65585	14010	79595	.....	1029	4
Vale.....	McBean.....	3080	194	.....	194	1256	369	53
Cape Breton.								
Block House.....	Block House.....	52571	47338	511	47849	2400	1086	6
Caledonia.....	Phelan.....	75202	65037	405	65442	1243	1360	4
Lorway.....	Emery.....	28540	15686	453	16119	1460	1045	8
Gardiner.....	Lorway.....	9169	5686	.....	5686	1580	1028	28
Glace Bay.....	{ Hub.....	46817 }	44897	751	6037	1827	1425	4
Gowrie.....	{ Harbor.....	21582 }	20718	71	.....	.....	.....	.....
International.....	McAulay.....	55625	43536	10143	54079	3155	3198	10
Lingan.....	Harbor.....	75380	72070	145	72215	1130	1812	4
	{ "Land".....	35934 }	23640	572	.....	.....	.....	.....
{ "Sea"..... }	Lingan.....	1626	1301	225	26067	1900	1677	9
	Barrasois.....	329	329	.....	.....	.....	.....	.....
Ontario.....	Phelan.....	8394	6848	65	6913	74	173	3
Reserve.....	Phelan.....	63929	41010	173	41183	2459	1823	7
Schooner Pond	Emery.....	13901	3864	.....	3964	453	623	7
Sydney Mines.....	{ Sydney Main.....	127393 }	101417	1706	140123	24359	7544	23
Victoria.....	{ Lloyds.....	6924 }	10423	689	11112	1049	230	10
Inverness County.								
Chalmey Corner	Ross.....	384	250	100	350	55	210	30
Victoria County.								
New Campbellton.....	.....	457	238	.....	238	80	60	30
			810353	70753	881106	70977	37421	10

* FREE COAL.—Chap. 9, Sec. 106, (n). "Slack Coal, that is coal that shall have passed through a screen, the bars of which are not wider apart than three-quarters of an inch." N. B. The high per centage of colliery consumption at some mines is in part or wholly accounted for by the consumption at new works, e. g. The 6,924 tons mined from the Lloyds Cove seam, were used at the sinking of the new pits.

*COAL PRODUCTION OF NOVA SCOTIA FROM 1827
TO 1873, INCLUSIVE.*

	Tons.
1827 to 1830.....	51,172
1831 to 1840.....	808,145
1841 to 1850.....	1,415,385
1851 to 1860	2,292,805
1861 to 1870	5,092,587
1871 to 1873.....	3,231,428
<hr/>	
Grand Total	12,879,898 Tons.

COAL SEABORNE. 1873.

By 428 Steamers.....	186,744 Tons.
“ 3176 Sailing Vessels.....	633,400 “
<hr/>	
	820,144 “

**EXTRACT FROM THE CUSTOM HOUSE REPORTS,
SHEWING QUANTITIES AND VALUE OF MINE-
RALS EXPORTED FROM NOVA SCOTIA DURING
THE FISCAL YEAR ENDED 30th JUNE, 1873.**

Minerals.	Countries.	Quantities.	Value.
COAL.....	Great Britain.....	500	\$ 1,875
	United States.....	232,760	484,861
	British West Indies...	1,538	4,278
	Foreign West Indies..	2,835	5,365
	St. Pierre and Miquelon	1,652	3,214
	Malaga.....	100	300
	B. N. A. Provinces...	51,667	96,104
	Bermuda.....	350	789
	South America.....	1,345	2,923
		292,747	\$549,709
IRON ORE.....	United States.....	300	\$ 1500
MANGANESE.....	United States.....	131	4005
STONE.....	United States.....		28,605
	B. N. A. Provinces.....		4,179

NOTE.—In the Table from which the above is an extract, no account is given of the quantities of gold, grindstones, building stone, plaster, &c. exported, as in previous reports.

IMPORTS.

Coal and Coke.....	Great Britain.....	2,773	\$15,633
	United States.....	4,868	22,830
		7,641	\$38,463

Anthracite imported from the United States into Halifax.

1872.	3715 tons.
1873.....	5605 “

STATEMENT OF COAL IMPORTED INTO AND EXPORTED FROM THE UNITED STATES DURING THE FISCAL YEAR ENDED JUNE 30TH 1873.

Imported.	Tons.	Value.
1873.	456,015	\$1,539,663
1872.	496,631	\$1,291,206
<hr/>		
Decrease.....	40,616	Increase \$248,457
<hr/>		
1873 Exported.	Bituminous.	Anthracite.
	Tons.	Tons.
Canada.....	165,290	263,165
Cuba.	30,301	24,217
Brazil	1,735	98
U. S. Columbia.....	6,363	26,006
West Indies.....	36,363	11,345
Mexico	2,411	5,337
West Coast South America	.....	3,242
Europe.....	.....	1,084
Asia.....	.....	7,686
<hr/>		
Total.. ..	242,453	342,180
<hr/>		
Value.....	\$1,086,253	\$1,827,822

1872. Total Bituminous and Anthracite 400,898 tons.

COAL IMPORTS AND EXPORTS OF THE UNITED STATES.

	IMPORTS.	Tons.
1870.....	420,683	Bituminous.
1871.....	443,955	"
1872.....	490,631	"
1873.....	456,015	"

	EXPORTS.	Tons.
1870.....	106,820	Bituminous.
1871.....	133,380	"
1872.....	141,311	"
1873.....	242,453	"

COAL EXPORTS FROM GREAT BRITAIN TO AMERICA.

Countries to which Exported.	1871	1872
Canada	189.274	175.902
United States		
On the Atlantic.....	91.483	58.101
On the Pacific	60.365	50.004
British West Indies.....	175.335	147.997
Foreign West Indies.....	281.877	301.323
Mexico	2.821	7.609
Central America.....	114	6.064
U. S. of Columbia (New Granada).....	11.241	4.503
Venezuela	370	388
Ecuador	1.015	
Peru	109.393	191.147
Bolivia	2.094	4.020
Chili	101.203	218.124
Brazil	316.417	315.536
Uruguay	96.648	130.914
Argentine Republic	62.860	62.312
Falkland Islands.....	245	696
Total.....	1,502,755	1,674,640

TOTAL COAL EXPORTS FROM GREAT BRITAIN.

1872.....	Tons	13,198,494	£10,442,321
1873.....	"	11,632,333	13,205,618

STATEMENT OF THE NUMBER AND CLASSES OF PERSONS EMPLOYED, AND AVERAGE RESULTS AT EACH COLLIERY DURING THE YEAR ENDED 31st DECEMBER, 1875.

COLLIERY.	UNDERGROUND.				SURFACE.			CONSTRUCTION.		TOTAL.		Ave No. of days per person.		No. Average of Tons per cutter.	Ave. quantity raised per day—Tons.	Horses.		Pits worked, days.
	Cut'trs.	Labors.	Boys.	Days.	Mechanics.	Labors.	Boys.	Days.	Persons.	Days.	Labors.	Unit ground.	Sur-face.			Above.	Below.	
Black Scotia.	6	1435	2	916	2	916	4	44	4	44	11	229	260	0.9	6	5	9	284
Joggins.	34	13189	11	5384	17	5384	6	716	88	19239	231	213	568	2.0	68	5	9	284
Spring Hill.	11	4389	4	8391	21	8391	20	3945	274	16695	300	610	25	2.2	25	6	...	274
Acadia.	151	53306	27	31585	89	31585	6	...	380	85191	207	275	744	2.7	411	13	4	273
Albion Mines.	237	89153	89	49237	72	49237	34	...	585	138380	228	232	637	2.1	(D 158 M 347)	27	24	D 277 M 280
Intercolonial.	60	23558	12	15337	39	15337	44	11773	228	51268	205	231	689	3.1	186	7	5	222
Mit bell & Co.	4	517	1	100	1	100	...	...	9	617	64	100	104	...	...	1	...	...
Nova Scotia.	80	36254	19	24514	50	24514	10	...	199	61768	302	310	1074	3.5	283	6	5	303
Vale.	42	9870	10	5298	9	5298	3	...	152	25108	193	241	73	0.5	30	2	...	135
Block-house.	81	24507	23	21345	73	21345	7	...	250	49019	186	207	649	3.1	256	9	23	205
Caledonia.	91	27891	28	13106	29	13106	4	...	196	44728	242	215	826	3.2	300	7	13	251
Collins.	4	48	2	33	2	33	...	...	6	81	12	17	...	...	...	...	...	...
Garland.	38	10287	19	5537	20	5537	3	...	89	6455	168	168	241	1.1	32	3	...	216
Glance Bay.	53	35194	20	14848	27	14848	4	...	220	62378	277	291	733	2.6	(H 167 Hr 71)	10	19	Hr 289 Hub 280
Gowrie.	96	30489	36	21257	31	21257	10	...	217	56414	236	280	621	2.2	219	7	4	272
International.	80	33900	21	18145	35	18145	3	...	179	52245	290	307	942	3.2	262	8	20	288
Lingan.	70	21633	11	19485	52	19485	12	...	192	41923	204	267	538	3.5	149	11	15	247
Lorway.	19	17943	22	13763	47	13763	6	...	195	6557	204	183	582	2.2	110	12	4	B 54
Ontario.	21	4192	2	3125	16	3125	3	...	46	7773	183	164	400	1.6	34	2	1	259
Reserve.	120	31140	33	16167	48	16167	4	...	241	47307	195	190	533	1.8	226	11	12	244
Schooner Pond.	35	10209	12	10620	23	10620	4	...	102	21129	212	257	397	2.0	71	6	4	283
Sydney Mines.	183	71822	57	49050	85	49050	26	...	521	140257	232	292	734	2.6	23	21	51	L 301 N 269
Victoria.	23	8009	6	4776	6	4776	4	...	53	13685	79	73	536	1.9	178	2	2	288
Chimney Corner.	11	443	3	156	3	156	1	...	20	599	28	39	27	0.9	14	...	...	28
New Campbellton.	20	1392	15	1367	11	1367	3	...	81	3732	37	42	23	0.5	11	5	2	43
Victoria.	1639	470	387	562240	464	562240	168	...	425	79421	225	225	642	2.7	165	186	236	235

COLLIERY.		Shafts.	Slopes.	Adits.	Machinery.	Colliery Build'gs.	Dwellings.	Surface Works.	Railw'ys	Wharves	Prospect- ing.
Black	Cumberland	-	-	-	-	-	-	-	-	-	55 00
Joggins	.	-	-	201 95	527 60	310 00	978 38	21 00	261	-	-
Scotia	.	-	-	204 00	-	12 00	-	-	-	-	-
Spring Hill	.	-	6934 13	200 00	19864 46	3623 37	16650 00	5615 67	16491 10	-	56 70
Acadia	Pictou	-	-	-	10884 31	1930 75	15648 63	1564 90	729 96	-	-
Albion Mines	.	3837 64	-	-	10017 10	59 65	4615 46	-	-	-	-
Intercolonial	.	4305 62	3710 42	685 15	6164 05	809 20	13040 00	2568 07	16581 78	202 50	-
Mitchell & Co.	.	-	-	-	-	-	-	-	-	-	398 75
Nova Scotia	.	-	1600	-	-	2525 00	2925 00	3260 00	1566 00	1989 00	25 00
Vale	.	-	11827	2855 00	2902 00	300 00	14473 00	1966 00	105397 00	11880 00	-
Merigomish	.	-	-	-	-	-	-	-	-	-	79 00
Block house	Cape Breton	-	-	-	639 00	-	-	-	-	7242 70	-
Caledonia	.	-	392 89	110 94	5171 39	393 36	2610 02	145 95	222 85	1386 84	-
Collins	.	-	-	-	-	-	-	-	-	-	-
Lorway	.	2042 42	2233 83	347 33	20250 00	4408 78	4287 00	5459 27	1480 97	-	-
Gardiner	.	5517 02	-	2774 00	1302 25	2342 00	5100 00	792 12	125 70	-	140 00
Glance Bay	.	9144 80	-	1285 85	2920 00	2535 96	-	-	-	-	-
Gowrie	.	210 00	-	110 00	950 00	1065 00	1000 00	60 00	850 00	139630 00	-
International	.	48 00	-	1414 30	600 00	-	11800 00	2358 76	493 57	2226 36	61 70
Lingan	.	684 47	2447 00	3228 16	3211 69	2041 35	7691 21	-	-	907 95	-
Ontario	.	-	78 75	548 16	20 00	20 00	-	-	-	-	-
Reserve	.	275 33	1016 24	877 56	6637 87	3481 68	2968 79	767 20	536 68	-	-
Schooner Pond	.	-	3577 13	-	2569 68	6518 80	2571 07	1817 98	1023 83	1151 83	-
Sydney Mines	.	11423 99	-	-	186 70	98 34	-	819 34	-	200 00	-
Victoria	.	-	-	250 00	1700 00	-	-	900 00	575 00	-	-
Sydney Mining Co.	.	-	-	30 00	650 00	-	-	-	464 00	730 00	-
New Campbellton	Victoria	-	-	1635 00	595 00	-	1393 00	2496 00	-	-	-
		37,489 29	53,817 39	16,757 40	97,223 10	32,555 24	107,751 56	306,12 26	146,799 44	41877 18	816 15

TABLES showing the number of Gold Mines worked, the average number of men engaged in Mining, the quantity of quartz Raised and Crushed, the average yield per ton, and the total yield of Gold, &c., &c., in the several Gold Districts, as shown by the Statistical Returns of the Deputy Commissioners.

JANUARY, 1873.

DISTRICT.	Number of Mines	Average No. of men daily employed.	Quartz Raised.		Quartz Crushed.		Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.		Tons.		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	2	8	130	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wine Harbor.....	1	29	113	.....	113	1	720	.....	.....	.....	.....	.....	.....	.....	.....	156	7	.....
Sherbrooke.....	10	107	517	.....	517	.....	1810	.....	.....	.....	.....	.....	.....	.....	.....	476	10	12
Tangier.....	4	41	91	.....	91	.....	191	.....	.....	.....	.....	.....	.....	.....	.....	86	17	7
Montagu.....	2	31	35	.....	35	.....	310	6	.....	.....	.....	.....	.....	.....	.....	123	14	.....
Waverley.....	4	45	116	.....	116	.....	138	.....	.....	.....	.....	.....	.....	.....	.....	77	2	.....
Olâham.....	2	23	31	.....	31	.....	1720	.....	.....	.....	.....	.....	.....	.....	.....	27	1	20
Renfrew.....	2	16	100	.....	100	.....	48	.....	.....	.....	.....	.....	.....	.....	.....	22	6	.....
Uniacke.....	2	2	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou.....	1	4	11	.....	11	.....	1017	.....	.....	.....	.....	.....	.....	.....	.....	11	8	12
Guy's River.....	1	8	250	.....	250	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	30	0	17
Unprocl'd. & other Dist's.....	2	19	61	.....	61	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	3	5	4
	33	333	1471	.....	1325	.....	157	.....	.....	.....	.....	.....	.....	.....	.....	1014	13	00

FEBRUARY.

Stormont.....	2	8	50	.....	47	1	14	19	.....	1	14	19	.....	.....	.....	.....	81	16	.....
Wine Harbor	1	27	47	.....	449	1	1	.....	.....	2	6	1	.....	.....	.....	.....	449	6	.....
Sherbrooke	10	96	449	.....	91	1	1	4	.....	1	4	4	.....	.....	.....	.....	96	8	12
Tangier	8	48	91	.....	101	1	5	.....	.....	3	1	21	.....	.....	.....	.....	126	7	.....
Montagu	2	42	101	.....	308	.....	10	6	.....	.....	16	.....	.....	.....	.....	.....	156	17	.....
Waverley	4	60	308	.....	55	2	1	2	.....	3	14	2	.....	.....	.....	.....	112	2	18
Oldham	3	19	55	.....	40	.....	7	12	.....	.....	7	12	.....	.....	.....	.....	15	.....	.....
Renfrew	2	12	40	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uniacke	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gay's River	1	8	280	.....	280	.....	1	17	.....	.....	1	17	.....	.....	.....	.....	23	19	10
Unprocl'd. & other Dist's.	1	16	56	.....	56	.....	2	5	.....	.....	2	5	.....	.....	.....	.....	6	3	.....
	37	342	1485	.....	1427	.....	14	23	.....	3	14	2	.....	.....	.....	.....	1068	19	16

MARCH.

DISTRICT.	Number of Mines	Average No. men daily employed.	Quartz Raised.		Quartz Crushed.		Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.		Tons.		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	2	6	47		.....		...	1	13	13	...	117	18	...	...	208	4	...
Wine Harbor.....	1	31	124		124		...	...	19	20	...	111	11	...	...	361	6	...
Sherbrooke.....	9	125	364		364		...	...	19	10	...	1	4	2	...	113	13	18
Tangier.....	6	31	109		117		...	1	16	5	...	4	16	15	...	135	16	...
Montagu.....	2	45	75		75		...	10	20	...	...	17	8	...	...	147	7	...
Waverley.....	4	58	272		272		1	7	7	...	4	14	5	...	...	95	4	15
Oldham.....	2	23	70		70		...	...	...	...	...	...	...	...	...	...	...	...
Renfrew.....	2	11	30		30		...	...	...	...	...	...	...	...	...	...	...	...
Uniacke.....	2	6	27		27		...	12	19	...	...	12	19	...	...	6	8	...
Caribou.....	1	4	10		10		...	2	7	...	...	2	7	...	...	32	11	...
Gay's River.....	1	9	280		280		...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd. & other Dis'ts...	1	1	.....		.....		...	...	...	...	...	...	...	...	...	...	...	...
	33	350	1408		1312		...	16	19	...	4	16	15	...	...	1100	10	9

MAY.

DISTRICT.	Number of Mines	Average No. men daily employed.	Quartz Raised.		Quartz Crushed.		Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.	Tons.	Tons.	Tons.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Stormont.....	2	3	50	172	4	5	...	17	18	4	5	...	...	...	...	36	3	14
Wine Harbor.....	2	45	244	294	...	...	...	12	22	1	4	14	...	...	...	260	18	18
Sherbrooke	11	92	902	902	...	...	...	15	8	2	4	...	...	...	...	583	17	22
Tangier.....	4	29	89	89	...	...	...	1	9	1	4	2	...	...	...	68	2	11
Montagu.....	3	47	110	110	...	...	...	8	5	3	19	6	...	...	...	159	10	...
Waverley.....	4	47	258	258	...	...	...	11	3	...	17	3	...	...	...	106	...	...
Oldham.....	6	19	34	34	...	...	...	...	...	1	1	14	...	...	...	18	19	20
Renfrew.....	2	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Uniacke.....	4	8	29	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Caribou .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gay's River.....	1	8	200	200	...	...	...	2	22	...	2	22	...	...	...	29	9	13
Unprocl'd. & other Dis'ts....	1	4	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	40	308	1936	2059	...	...	...	10	19	3	19	6	...	...	...	1263	2	2

JUNE.

[illegible]

JULY.

DISTRICTS.	No. of Mines.	Average number of men daily employed.	Quartz Raised.		Quartz Crushed.	Yield per Ton.		Maximum yield per Ton		Gold obtained otherwise than from Crusher.		Total yield.	
			Tons.		Tons.	Oz.	Dwt.	Oz.	Dwt.	Oz.	Dwt.	Oz.	Dwt.
Stormont.....	.....	.....	.....	.....	9	3	18	4	3	1	14	1	15
Wine Harbor	2	53	259	.....	259	18	7	19	8	237	3	16	3
Sherbrooke	13	137	740	.....	740	15	2	6	16	559	10	8	8
Tangier	2	18	64	.....	44	1	3	1	19	50	15	.....	.....
Montagu	3	34	133	.....	133	14	20	2	4	98	14	9	9
Waverley	3	33	76	.....	76	10	13	18	3	40	1	.....	.....
Oldham	6	12	17	.....	17	13	19	1	10	11	5	14	14
Renfrew	2	4	36	.....	36	4	4	7	4	7	10	.....	.....
Uniacke	2	3	4	.....	4	.....	.....	.....	.....	.....	.....	.....	.....
Caribou .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gay's River	1	5	200	.....	200	1	21	1	21	19	1	20	20
Unprocl'd. & other Dis'ts.....	1	1	.....	.....	13	8	2	8	2	5	5	2	2
	35	300	1529	.....	1527	13	12	6	16	1031	1	12	12

AUGUST.

Stormont	2	60	257	257	257	...	11	20	16	14	..	152	5	5
Wine Harbor.....	11	108	588	588	588	...	10	11	3	8	..	307	17	8
Sherbrooke	2	15	55	61	61	...	16	12	1	12	..	50	6	..
Tangier.....	3	30	31	31	31	6	6	..	6	6	..	195	7	..
Montagu	3	40	60	60	60	...	6	3	..	10	..	18	8	..
Waverley	3	23	68	68	68	1	16	..	3	12	..	121	13	..
Oldham	1	8	20	20	20	...	..	..	1	12	..	40	18	..
Renfrew	2	3	3	3	3	...	0	11	1	11	..	18	18	18
Uniacke .....	...	...	...	...	...	...	...	...	...	...	..	...	...	...
Caribou	1	8	180	180	180	...	2	3	..	3	..	19	4	12
Gay's River.....	1	1	...	13	13	...	8	2	..	2	..	5	5	1
Unprocl'd & other Dis'ts.....	29	296	1262	1298	1298	...	14	1	6	6	..	911	4	20

SEPTEMBER.

DISTRICTS.	Number of Mines	Average No. men daily employed.		Quartz Raised.		Quartz Crushed.		Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
				Tons.		Tons.		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont.....	2	46	.....	274	.....	.....	.....	14	22	.....	2	13	15	.....	.....	.....	209	7	5
Wine Harbor.....	11	107	.....	706	.....	.....	.....	13	8	.....	2	2	7	.....	.....	.....	471	2	.....
Sherbrooke.....	2	25	.....	84	.....	65	.....	7	.....	.....	17	12	.....	.....	.....	.....	19	8	11
Tangier.....	3	27	.....	41	.....	41	.....	2	6	9	2	15	17	.....	.....	.....	91	18	.....
Montagu.....	3	40	.....	201	.....	201	.....	8	16	.....	11	1	.....	.....	.....	.....	87	10	.....
Waverley.....	4	23	.....	59	.....	59	.....	2	7	.....	4	16	14	.....	.....	.....	139	12	.....
Oldham.....	1	4	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Renfrew.....	2	3	.....	7	.....	.....	.....	18	15	.....	18	15	.....	.....	.....	.....	6	10	12
Uniacke.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou.....	1	8	.....	180	.....	.....	.....	2	12	.....	2	12	.....	.....	.....	.....	22	9	2
Gay's River.....	1	1	.....	.....	.....	.....	.....	7	12	.....	7	12	.....	.....	.....	.....	5	5	1
Unprocl'd. & other Dis'ts.....	30	284	.....	1562	.....	1547	.....	13	14	.....	4	16	14	.....	.....	.....	1053	2	7

OCTOBER.

Stormont.....	2	36	224	254	1410	1	420	183	11	9
Wine Harbor.....	11	108	528	528	1515	214	2	417	13	12
Sherbrooke.....	5	29	69	67	621	7	2	23	2	.....
Tangier.....	2	26	29	29	3310	3	310	92	.....	.....
Montagu.....	3	32	118	118	715	10	8	46	5	.....
Waverley.....	2	27	87	87	11621	3	522	160	4	10
Oldham.....	1	4	20	10	316	3	316	1	16	18
Renfrew.....	4	3	5	25	1219	1	23	16	0	12
Uniacke.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou.....	1	8	250	250	112	1	112	25	1	4
Gay's River.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unprocl'd. & other Dist's.....	31	273	1330	1368	142	3	522	965	14	17

NOVEMBER

DISTRICTS.

DISTRICTS.	No. of Miners.	Average No. men daily employed.	Quartz Raised.		Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield.		
			Tons.		Tons.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont.....	2	27	60			18	5								27	7	
Wine Harbor.....	11	108	767			11	4		18	5					428	5	
Sherbrooke.....	5	21	80			2	8		18	6					43	7	18
Tangier.....	2	25	27			2	8	1	2	8	1				64	18	
Montagu.....	4	32	95			10	13		15	15					50	4	
Waverley.....	4	27	52			1	6	11	7	5					68	7	11
Oldham.....																	
Renfrew.....																	
Uniacke.....	3	3	5			4	2			13					5	15	
Caribou.....																	
Guys River.....	1	9	250			1	7			1	7				16	10	
Unprocl'd. & other Dis'ts.....																	
	32	252	1336			10	10		7	5					704	14	5

DECEMBER.

Stormont.....	3	37	145	222	...	6	14	1	7	6	...	73	1	...	22
Wine Harbor.....	7	45	693	600	...	7	1	2	15	16	...	244	5	...	22
Sherbrooke.....	5	18	39	37	...	11	2	...	11	2	...	20	9	...	22
Tangier.....	2	24	25	25	...	2	5	14	2	5	14	...	57	...	...
Montagu.....	3	36	105	105	...	12	1	...	17	7	...	63	6	...	...
Waverley.....	6	35	34	34	...	3	14	22	22	1	...	128	1	...	23
Oldham.....					...						...			...	...
Renfrew.....					...						...			...	...
Uniacke.....					...						...			...	...
Caribou.....					...						...			...	...
Gay's River.....	1	11	250	250	...	1	12	...	1	12	...	19	2	...	2
Unprocl'd. & other Dis'ts...					...						...			...	...
	27	206	1291	1366	...	8	20	22	...	...	...	605	6	...	21

B.

STATEMENT showing the average daily labor employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ended December 31st, 1873.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, &c., Crushed.	Yield per ton.	Gold from Alluvial Mines.	Total yield of gold.	Maximum yield per Ton.	Average yield per man for twelve Months at \$18.50 per oz.
Stormont.....	3	3	1	2	181	0 4 4	.....	37 18 5	4 5	233 71
Wine Harbor	40	5	4	1	2267	0 17 15	.....	2000 0 3	2 13 15	925 00
Sherbrooke	101	12	9	3	7187	0 15 9	.....	5026 0 4	6 16 0	920 59
Tangier ...	28	4	3	1	1070	0 13 4	.....	726 11 16	2 18 7	220 75
Montagu	35	3	3	..	679	2 2 9	.....	1440 3 9	6 6 0	761 14
Waverley ..	43	3	2	1	2013	0 10 0	.....	1009 0 0	8 18 6	434 10
Oldham	23	3	1	2	662	1 10 3	.....	998 2 17	22 0 0	802 82
Renfrew	6	5	2	3	255	0 4 16	.....	59 16 18	7 12	184 34
Uniacke.	4	4	3	1	198	0 13 1	.....	129 8 18	1 5 10	599 63
Carlbot.	1	2	1	1	21	0 16 23	.....	17 16 12	1 0 17	329 29
Gay's River	9	1	1	..	2984	0 2 8	33 15 15	352 17 23	2 22	725 30
Unprocl'd and other Dist's.....	5	8	4	4	191	0 5 17	.....	54 11 14	19 11	201 83
	298	53	34	19	17708	0 13 10	33 15 15	11852 8 19	22 0 0	735 82

No. 1.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOR.					SHERBOOKE.					TANGIER.					
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	
January.....	8	...	...	...	...	29	113	156	7	...	107	517	476	10	12	...	41	91	86	17	...
February.....	8	...	...	...	...	27	47	81	16	...	96	449	449	6	12	...	48	91	96	8	...
March	6	...	...	...	...	31	124	208	4	...	125	364	361	6	..	...	31	117	113	13	...
April.....	6	...	...	...	...	33	187	202	19	..	81	390	355	8	13	...	34	227	96	10	...
May.....	3	172	36	3	14	45	294	260	18	18	92	902	583	17	22	...	29	89	68	2	...
June	1	...	...	...	...	64	206	206	19	...	96	543	370	17	21	...	33	77	57	10	...
July .....	..	9	1	14	15	53	259	237	3	16	137	740	559	10	8	...	18	44	50	15	...
August.....	..	...	...	...	...	60	257	152	5	5	108	588	307	17	..	...	15	61	50	6	...
September.....	..	...	...	...	...	46	274	209	7	5	107	706	471	2	..	...	25	65	19	8	...
October.....	..	...	...	...	...	36	254	183	11	9	108	528	417	13	12	...	29	67	23	2	...
November.....	..	...	...	...	...	27	30	27	7	..	108	767	428	5	..	...	21	104	43	7	...
December.....	..	...	...	...	...	37	222	73	1	22	45	693	244	5	..	...	18	37	20	9	...
	3	181	37	18	5	40	2267	2000	00	3	101	7187	5026	00	4	...	28	1070	726	11	...

No. 2.

Statement shewing the number of Men employed, Quartz Crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.					
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	
January	31	35	123	14	...	45	116	77	2	...	23	31	27	1	20	16	100	22	6	...	
February	42	101	126	7	...	60	308	157	17	...	19	55	112	2	18	12	40	15	...	...
March	45	75	135	16	...	58	272	147	7	...	23	70	95	4	15	11	...	...	...	...
April	41	41	159	15	...	47	261	130	3	...	19	110	98	...	10	11	69	13	4	...	
May	47	110	159	10	...	47	258	106	...	...	19	34	18	19	20	...	...	...	...	...
June	50	31	135	4	...	50	143	84	17	...	19	45	17	8	20	...	...	...	...	...
July	34	133	98	14	9	33	76	40	1	...	12	17	11	5	14	4	36	7	10	...	
August	30	31	195	7	...	40	60	18	8	...	23	68	121	13	...	8	...	...	...	...
September	27	41	91	18	...	40	201	87	10	...	23	59	139	12	...	4	...	...	...	...
October	26	29	92	...	...	32	118	46	5	...	27	87	160	4	10	4	10	1	16	18
November	25	27	64	18	...	32	95	50	4	...	27	52	68	7	11	...	...	...	...	...
December	24	25	57	...	...	36	105	63	6	...	35	34	128	1	23	...	...	...	...	...
	35	679	1440	3	9	43	2013	1009	0	...	23	662	998	2	17	—	—	—	—	—	—
																6	255	59	16	18	

No. 3.

STATEMENT shewing the number of Men employed, Quartz crushed, and Gold obtained each month in each District.

MONTH.	UNLACKE.					CARIBOU					GAY'S RIVER.					UNPROCLAIMED, &c.					
	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	
January	2	...	...	...	...	4	11	11	8	12	8	250	30	...	17	19	61	3	5	4
February.....	2	...	...	...	...	4	...	...	...	...	8	280	23	19	10	16	56	6	3	....
March	6	...	...	...	...	4	10	6	8	...	9	280	32	11	...	1	...	...	...	....
April	6	68	49	6	...	...	...	...	...	...	13	300	43	...	...	4	20	19	9	20
May	8	...	...	...	...	...	...	...	...	...	8	200	29	9	13	4	...	...	...	....
June	8	30	10	18	...	...	...	...	...	...	14	364	72	8	15	19	14	9	18	10
July.....	3	...	...	...	...	...	...	...	...	...	5	200	19	1	20	1	13	5	5	2
August.....	3	40	40	18	18	...	...	...	...	...	8	180	19	4	12	1	13	5	5	1
September	3	7	6	10	12	...	...	...	...	...	8	180	22	9	2	1	14	5	5	1
October.....	3	25	16	...	12	...	...	...	...	...	8	250	25	1	4	...	...	...	...	....
November.....	3	28	5	15	...	...	...	...	...	...	9	250	16	10	...	...	...	...	...	....
December .....	...	...	...	...	...	...	...	...	...	...	11	250	19	2	2	...	...	...	...	....
	4	198	129	8	18	4	21	17	16	12	---	9	2984	352	17	23	5	191	54	11	14

PLASTER, (GYPSUM) TRADE.

	1872. Tons.	1873. Tons.	Value.
Antigonish		700	700
Big Bras D'or		2,575	2,575
Cheverie	29,430	30,679	30,679
Hantsport	4,340	3,310	3,310
Maitland	510	615	651
Parrsboro'		2,630	2,630
Walton	3,370	4,356	4,356
Windsor	61,820	75,828	75,828
	99,470	120,693	\$ 120,693

FREE STONE.

	Tons.	
Cheverie	405	\$ 1420
Hantsport	150	1500
Minudie	475	3800
Windsor	150	1202
	1180	\$ 7922

N. B. The probable shipments from Wallace, 5000 Tons.

GRIND STONES.

	Tons.	
Minudie	1,590	\$ 22,260
“ “Ritchie,” 3,500 pieces.	15	1,050
“ “Seythe,” 2,600 boxes	35	3,300

PLUMBAGINOUS SHALE.

	Tons.	
Windsor	11	\$ 110

MOULDING SAND.

	Tons.	
Windsor	130	\$ 260

FINANCIAL STATEMENT—GOLD.

Department of Mines for the 12 Months ended December 31st, 1873.

DISTRICTS.	RECEIPTS.				EXPENDITURE.					Totals.
	Rents.	Royalty.	St. to	Totals.	Salaries, &c.	Return of Rents.	Return of Royalty.	Royalty Com'son.	Lands.	
Oldham	\$ 129 67	290 72	.....	520 39	253 00	16 00	.....	14 72	.....	285 72
Renfrew	252 00	67 69	.....	319 69	241 50	22 00	.....	69	.....	234 19
Waverley	6 00	395 55	.....	311 55	.....	.....	144 61	8 05	.....	152 66
Tangier	134 00	444 47	.....	588 47	.....	54 50	.....	10 61	.....	65 11
Stormont	74 00	70 31	.....	144 31	319 96	15 57	.....	9 29	.....	344 82
Wine Harbour ..	472 00	843 67	.....	1315 67	486 54	.....	.....	48 35	.....	484 89
Sherbrooke	316 00	1881 54	.....	2197 54	720 00	78 88	.....	87 93	.....	886 81
Ovens	16 00	.....	.....	16 00	.....	.....	.....	.....	.....	.....
Fifteen Mile Stream	4 00	.....	.....	4 00	.....	.....	.....	.....	.....	.....
Montagu	8 00	339 45	.....	347 45	.....	.....	.....	27 46	.....	27 46
Uniacke	466 00	67 87	.....	533 87	248 00	47 36	.....	2 12	.....	297 48
Gays River	94 00	157 57	.....	251 57	.....	12 00	.....	5 85	.....	7 85
Caribou	68 00	27 16	.....	95 16	.....	.....	18 57	.....	.....	18 57
Lawrencetown ..	6 00	.....	.....	6 00	.....	.....	.....	.....	.....	.....
Unproclaimed ..	62 00	9 11	.....	71 11	31 50	.....	.....	.....	.....	31 50
Prospecting Lands	.....	.....	.....	792 56	.....	.....	.....	.....	.....	.....
	\$2107 67	1712 99	.....	7653 25	2222 50	236 31	163 18	215 07	.....	2837 06

OTHER THAN GOLD.

Department of Mines for the 12 Months ended December 31st, 1873.

COUNTIES.	RECEIPTS.				EXPENDITURE.			
	Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Licenses to Search.	Return Licenses to Work.	Surveys.	Totals.
Antigoni sh	\$580.00	.....	.....	580.00	.....	.....	300.00	300.00
Cumberland.....	920.00	1475.00*	1477.92	3872.92	.....	.....	.....	60.00
Cape Breton	620.00	525.00	51,905.86	53,050.86	60.00	.....	16.00	56.00
Pictou.....	2160.00	525.00	30,123.74	32,808.74	40.00	.....	.....	.....
Inverness	900.00	275.00	.....	1175.00	.....	.....	.....	40.00
Colchester	500.00	50.00	.....	550.00	40.00	.....	.....	20.00
Halifax	40.00	.....	.....	40.00	20.00	.....	.....	.....
Hants	240.00	.....	.....	240.00	.....	.....	.....	.....
Richmond	380.00	.....	.....	380.00	.....	.....	.....	.....
Victoria	220.00	.....	.....	220.00	.....	.....	.....	20.00
Guysborough ..	200.00	.....	.....	200.00	20.00	.....	.....	.....
Lunenburg	20.00	.....	.....	20.00	.....	.....	.....	.....
Digby	60.00	.....	.....	60.00	.....	.....	.....	.....
Total	\$6,840.00	2,850.00	83,507.52	93,197.52	180.00	.....	316	496.00

*ABSTRACT ACCOUNT of the Subscriptions made for the
Relief of the Sufferers by the DRUMMOND COLLIERY EXPLOSION.*

	\$	c.	\$	c.
Halifax, Nova Scotia.....	7842	47		
Pictou “	1789	87		
Yarmouth “	677	00		
Truro “	311	64		
Shubenacadie “	131	75		
Goldenville “	109	55		
Amherst “	65	00	\$10,927	28
Sydney, Cape Breton.....			144	50
Montreal			5270	36
St. John, New Brunswick.....	1400	00		
Oxford, “	32	84	1432	84
Other Sources.....	499	70		
Eastern Division Intercolonial R. R....	55	00	554	70
Boston, United States.....	1062	24		
Portland “	177	76	1240	00
<i>Local Subscription.</i>				
New Glasgow	564	00		
Stellarton	296	50		
Westville	278	78		
Albion Mines	663	25		
Acadia Colliery.....	411	75		
Nova Scotia “	265	40		
Vale “	171	00	2650	68
Blockhouse and Gowrie Collieries	266	00		
Reserve Colliery, C. B.	231	00		
International “	175	56		
Lorway “	139	50		
Schooner Pond “	98	10		
Caledonia “	102	50		
Gardiner “	57	00	1069	66
Albert “ N.B.			65	00
Pennsylvania Mines.....	237	97		
Other Sources abroad.....	84	00	321	97
Total			\$23,676	99



REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA.

FOR THE YEAR 1874.



HALIFAX, N. S.:

PRINTED BY THE CITIZEN PUBLISHING COMPANY.

1875

CONTENTS.

	PAGE.
Inspector's Report.....	1
General Summary.....	1
Coal Trade.....	2
“ “ with the United States.....	3
“ “ “ “ West Indies.....	6
Improved Appliances.....	6
Coal Cutting Machinery.....	8
Drilling Machines.....	9
Diamond Drills.....	26, 28
Portable Fire Extinguishers.....	10
Direct Acting Steam Pumps	10
Pick-handles.....	11
Explosives.....	12
Dynamite.	41
Handling Coal.....	13
Shipping.....	14
Screening.....	16
Soft Coal Base-Burners.....	17
Mines Regulation Chapter.....	18
Examination Papers.....	19
Plans.....	22
Weighing.....	23
Coal Mining, Cumberland County.....	25
Pictou County.....	28
Cape Breton.....	32
Victoria County.....	39
Gold Mining.....	40
“ Districts.	42
Iron Mining.....	49
Ore Analyses	80
Lead Mining.....	55
Quarries.—Freestone.....	56
Plaster, &c.....	57
Salt, Petroleum.....	58
Accidents.....	60
List of Leases and Lessees.....	68
Tables.—Coal. Trade by Counties.....	72
General Statement.....	74
Colliery Production.....	75
Total Production; 1785 to 1874.....	76
Exports from Halifax.....	77
Imports of St. John's, New York, &c.....	77
Colliery Labour, &c.....	78
“ Construction Account.....	79
Gold.—General Statement.....	82
District Returns.....	83
Departmental Accounts.....	86

LETTER

FROM

THE COMMISSIONER OF PUBLIC WORKS AND MINES,

TRANSMITTING

A Report of the Department of Mines.

DEPARTMENT OF MINES,

Halifax, February 15th, 1875.

SIR,—I have the Honor to transmit the report of the Inspector of Mines and the statistical information collected by this Department during the year 1874.

ROBERT ROBERTSON,

Commssioner of Public Works and Mines.

HON. P. C. HILL,

Provincial Secretary.

REPORT

ON THE

INSPECTION OF MINES,

IN THE

PROVINCE OF NOVA SCOTIA.

For the year ended 31st December, 1874.—By HENRY S. POOLE, F. G. S.;

ASSOCIATE OF THE ROYAL SCHOOL OF MINES.

HALIFAX, February, 1875.

SIR,—I have the honour to lay before you my annual report on the state of the mining industries of the Province. In it I have added a few remarks that the mining practices of other countries have suggested, as relevant to our present condition and circumstances.

To prepare the general summary of the mineral produce of the country during 1874, as given below, recourse has been had to miners and quarriers, as well as to those working under leases from the Crown. Acknowledgments are due to them, and also to the Collectors of Customs at the several mineral shipping ports, for the interest they have kindly taken in forwarding statistics.

GENERAL SUMMARY.

Mi ^{nes.}	Minerals.	Quantities.	Values.
30	Coal tons.	872,720	\$1,787,098
33	Gold, 13,844 tons quartz. . . . oz	9,141	164,538
2	Iron ore. tons.	2,469	7,407
12	Plaster “	104,140	104,140
10	Freestone, (Grindstones, &c.) “	8,829	40,313
1	Limestone “	448	537
	Moulding Sand “	300	600

A comparison of the above summary with that of the preceding year, shows a falling off in each of the industries represented. While the general dullness of trade will account for the reduced production of coal, plaster and freestone, it will not for that of gold and the continued decline in this branch of mining industry, must be set down to other causes such as the increased price of labour and material. Further reference will be made to this subject under the head of Gold Mining.

THE COAL TRADE.—The past year was one of general depression and contrasts unfavourably with the preceding, for beside the actual decrease, 131,979 tons, there was the dullness resulting from the inactivity of new works and want of occupation for the additional labour, drawn by the previous brisk demand, to this branch of business.

The anticipated continuance of the active trade of 1873 was reluctantly acknowledged by many operators to be impossible, so that they continued until well on in the spring, to accumulate stocks. During the first quarter of the year more coal was mined than during any subsequent quarter, and at its end 285,000 tons were on hand, an unusually large amount. Ordinarily the production during the winter months is the smallest of the year. On the first of July the total quantity on bank was as much as 303,000 tons. At some of the mines the sales were as large as they had been in former years, but no where were they equal to the capacity for production. A comparison of the tables stating the labour employed during the two years shows the average number of working days to be lower in 1874, and that consequently in several localities the working man was seriously inconvenienced by the late condition of the trade.

Writers in the public press of England and Canada have, in speaking of the coal trade of Nova Scotia, quoted figures given in the Sessional Papers, which they naturally presumed were correct, being compilations from the Custom House reports, and they have drawn conclusions that those figures seem to deduce. The value of their strictures may be gathered from a comparison of the statements given below. The one compiled from the Custom House reports, and the other from sworn returns made by shippers who had to pay royalty on the amounts stated.

NOVA SCOTIA COAL EXPORTS SUMMARY.

Mines Department Statistics.

For the year ended 30th June—

	1871	1872	1873
B. N. A. Provinces.	179,168	181,996	320,122
Foreign Ports	271,552	360,976	332,172
	<hr/> 450,720	<hr/> 542,972	<hr/> 652,294

Sessional Papers Statistics.

For similar periods—

B. N. A. Provinces.	49,308	51,667	70,682
Foreign Ports.	261,808	241,080	294,217
	<hr/> 311,116	<hr/> 292,747	<hr/> 364,899

The practical value of the quoted statistics is apparent.

The history of the coal trade during the past three years is instructive to both producers and consumers. In 1872 all kinds of business were active, manufacture was stimulated and thereby the demand for coal greatly increased. England could not supply her own wants, and the price rose with the foreign demand. In the United States the stocks held were small and urged by the stimulated condition of the general trade unusual activity prevailed, and dealers, going to the other extreme, gave large orders so that the supplies in the summer of 1873 were excessive. Then came the panic in October, and the reaction that set in affected all trades, checked manufacturing, and reduced the demand for coal. The result was an overstock in the spring of 1874, and a sluggish trade throughout the year.

The trade with the United States suffered most by the depression, and the falling off, 126,425 tons, was almost equal to the total decrease of the year's business. Of the quantity exported, Portland took 8084 tons last year for the use of the Allan line of steamers, while some 20,000 tons are annually used by the iron manufacturers of New England. Messrs. Bird, Perkins & Job, whose knowledge of this branch is most thorough, expect but a moderate increase in 1875, and that Cape Breton will not sell more than 80,000 tons for gas purposes. They report that it is

now well known that for gas making only a certain proportion of Provincial coal can economically be used in the States, and then only as an admixture with American gas coals and that unless some contingency arose that would render uncertain the supply of native coal, the imports of Provincial coal will necessarily be limited to such quantities as can be used to advantage. The quantity of coal annually required for gas manufacture in New York and New England is about 850,000 tons, but only the larger works situated in the principal cities on the coast are prepared to advantageously use Provincial with American coal, and the amount thus open this year to Provincial exporters is only about 100,000 tons.

The principal obstacle in the way of increased sales is the great uncertainty as to the first cost of the coal to the purchaser in the States, arising from the fluctuation in the rates of freight which is beyond the control of either the vendor or purchaser. An example may be illustrated by the experience of the past year. In 1873 the average rate of freight from Cape Breton to New York was about \$4.00. The maximum rate was \$4.50. In the spring of 1874 contractors thought they did well to secure tonnage at the apparent low rate of \$3.25, but shipments had hardly commenced before the rate fell to \$2.50. Still later it was reduced to the unprecedented low figure of \$1.75, at which rate some 5,000 tons were shipped in the autumn. Thus there was an actual variation of \$1.50 per ton on the final cost of the coal delivered. Such a possible variation in the final cost to the purchaser is a serious obstacle to the making of extensive contracts.

A mining company cannot afford to assume the risk of delivery at the minimum, nor the purchaser enter into any large contract that may subject him to pay the maximum freight. No such difficulty as this is experienced by either the purchaser or seller of American coals for the New York market. These coals are mined directly on the line of the rail roads, and the cost of transportation to tide water, and thence to the wharf of the purchaser in New York, is fixed at the opening of the season for the entire year. When, therefore, a mining company in Pennsylvania make a contract for 500,000 tons of coal, covering an entire year's shipment, they know just what their coal will net them, and the purchaser knows just what his coal will cost for the entire year, neither party assuming any risk whatever as to the rate of freight. The item

of gold premiums, of course, does not enter into the calculation at all.

The contract price of American gas coal for 1874 was \$7.50 per ton of 2240 lbs., delivered in New York—a reduction of 75 cents from that of 1873. This price was satisfactory to both buyers and sellers. Now, taking the average freight of Cape Breton coal for 1873 as a basis, the estimated cost of Provincial coal delivered in New York for 1874 would have been, viz.:—

Cost at Shipping Port.....	\$2.00
Duty.....	.75
<hr/>	
Gold.....	\$2.75
Add for premium on Gold and Insurance	40
<hr/>	
	\$3.15
Estimated freight	4.00
<hr/>	
Currency.....	\$7.15

At the estimated difference of value between American and Provincial coal, the latter would not have come into the market to any extent, at a cost of over \$6.50. The actual cost of the coal that was delivered ranged from \$6.44 down to \$4.65; the fluctuation in cost resulting from the changes in the rate of freight. The average cost was \$5.68; but no Cape Breton mining company would have been warranted in contracting to deliver coal in New York at that price, yet the result of the year's work showed that it might have been done, and a handsome margin left for the risk.

In estimating the prospect of an increasing business in the States for our coal, it would be unwise not to overlook the above facts. Whether any practical remedy is at hand to relieve the trade of this embarrassment is a question for the consideration of mining companies if they desire to again increase the business that in former years proved so valuable to them. It must be also borne in mind that the purchaser of Provincial coal must crowd his receipts into about six months of the year in order to avail himself of the most favourable freights; thus necessitating a large accumulation of stocks in advance of actual requirements, subject, of course to interest on cost, storage expenses, and unavoidable depreciation in quality. None of these items enter into the cost of American coal which can be delivered every month in the year direct from the

pit. The time elapsing between the mining of the coal and its delivery at the gas works rarely exceeding one week.

The custom that prevails of banking large quantities of coal in the winter months, for shipment during the succeeding summer, has tended greatly to injure the reputation of our coal in all the markets where it comes in competition with American coal.

Owing to the reduced price of coals in England and the low freights current thence to the West Indies during the early part of 1874, the latter markets received the bulk of their last year's supplies from the English collieries. The partial loss of this trade to our shippers may be also traced to the uncertain rates of freight, and to the fact that at the season when vessels seek the West Indian markets the Cape Breton ports are either inaccessible or are visited under heavy restrictions from underwriters. In 1873 freights from Cape Breton to Cuba varied from \$7.25 to \$4.00 gold. The latter rate placing the coal in Cuba at a cost of about \$6.00 in gold. Before any assurance could be given that no higher rate than this would rule in 1874, large orders for coal were accepted in England at a cost, delivered in Cuba, not exceeding the minimum of 1873. The bulk of the coal required for the West India markets was thus diverted to England and the close of the year 1874 found those markets very heavily stocked. The greater part of that which was sent from Nova Scotia was shipped on ships' account and was sold at ruinously low prices.

The value of a shipping port that can be made available all winter, may be inferred from the fact that vessels at Baltimore accepted \$1.25 to \$1.50 American currency, as freight from that port to Cuba in the month of December, 1874. This low freight quite counterbalancing the extra cost of the coal at Baltimore above our Provincial coal.

Some few cargoes have been shipped to South America but no extensive trade can be expected in that quarter. The supply of coal for that market is almost entirely under the control of parties in England, who do not look with favour on Provincial coal when any other is obtainable.

IMPROVED APPLIANCES.—With the increasing price of labour, and increasing demand for rapidity of production and prompt completion of enterprises once undertaken, the inducements to invent tools and machinery to substitute for human skill and brute force,

increase. The increase has of late been rapid and every year brings forth new inventions and finds new applications for successful contrivances even in well beaten paths of production and manufacture. The application of machines and machine tools to replace manual labour permits the mental power of man to be utilised with greater advantage than his physical force can be, and it enables the manufacturer to produce a more uniform character of work, and to more readily equalize the supply to the demand at a reduced cost. In other countries where works are carried on more numerous and on a larger scale, there are greater opportunities and more inducements to suggest and apply inventions. Here, we may be well satisfied to follow closely the lead of others and adopt what has elsewhere been thoroughly tested and approved.

Our miners are generally alive to the advantages derivable from the adoption of improvements and new machinery, and mention will be subsequently made in this report of many that have been adopted. But from want of precise and practical knowledge there is often a reluctance to apply that which may prove only an expensive and impracticable experiment. This wise hesitation does not, however, alone limit the introduction of improvements, but it is often assisted by a too ready acceptance of the adage: "Leave well alone"; and an indifference to emulation. Then the natural difficulties to be encountered, dullness of trade, an expended capital, an absence of method on which to engraft reforms, all furnish excuses why an indifferent system should be perpetuated by the side of improvements, elsewhere attended by economy and efficiency.

The present inactive state of our gold mines is not conducive to the general introduction of new methods of working and milling, though doubtless were they owned by companies and managed by experienced miners, many modern appliances might be beneficially adopted. The application of a safe and powerful explosive, such as dynamite, for such confined work as quartz mining is decidedly one of the steps that now appear the more likely to revive this branch of our mining industry. Its introduction, successful use, and economy compared with powder will be specially mentioned.

At the collieries the case is somewhat different, the operations, though not at present very profitable, being on a more extended scale, modifications of plant or system may well be undertaken

when economy and extended trade are in prospect. A few references will be made to some of the improvements applicable and conducive to this end.

COAL CUTTING MACHINERY.—Quite a number of machines have been invented in Great Britain within the last fifteen years, for the purpose of relieving the miner of his hardest and most trying labour, the cutting of the coal, and, if possible, of doing the work more efficiently and at a less cost. The coal owners in this Province have also naturally had their attention directed to this matter ; but no one has yet ventured to try what elsewhere has invariably proved an expensive experiment. Several companies in England have spent thousands of pounds in the endeavour to bring some of these inventions to perfection, but although many machines have been working for years, it would seem, as far as can be gathered from the conflicting reports of rival inventors, that no one can absolutely be recommended as applicable in all cases. One machine is found superior at one colliery, while its rival surpasses it at another. It is claimed that already the great object in introducing machinery for cutting coal has been attained, and that the work is now done at a less cost, and in a better manner than by hand. Still the confidence of coal owners in the economy attending the use of coal cutting machinery is but slowly growing, and until the advantages are well established and the economy of working some one machine clearly shown, it can hardly be expected that the introduction of a system of working so costly will be undertaken in this Province, while abroad it is still regarded in the light of an experiment.

The following statement made by Mr. Firth, the patentee of the pick machine, is of interest in connection with the subject :

“A machine can under favourable circumstances, cut 20 yards in an hour to a depth of 3 feet, but we consider 10 yards an hour very good work. This is about equal to the day's work of twelve average men. The persons employed to work the machine are one man, one youth, and one boy, who remove and lay down the road and remove the debris.

For the purpose of comparison, I take 60 tons of coal per day (which would come out of 45 yards of machine working.)”

COST BY HAND.

30 men cutting, filling, timbering, drilling, road.laying,
 blasting and all other needful work ready in the
 tubs for the "putter" at 4s. 5 $\frac{3}{4}$ d. per ton £13. 8s. 9d.

BY MACHINE.

1 Machine man at	£	8s.	9d.	
1 Youth "		5	6	
1 Boy "		3	6	
3 Men cleaning and packing at 8s. 4d.....	1	5	0	
6 men filling at 8 $\frac{1}{4}$ d. per ton.....	2	1	3	
3 men timbering at 6s. 10.....	1	0	6	
3 men drilling and blowing down at 6s. 10d.....	1	0	6	
1-8 the cost of steam and air expenses.....	1	14	0	
Maintenance at 1d. per ton.....		5	0	
Redemption of capital at 2d. per ton.....	10	0		8 13 9
<hr/>				
Difference in favor of the Machine, 1s. 7d. per ton				4 15 0
<hr/>				£13. 8s. 9d.

DRILLING MACHINES are coming more and more into general use as improvements are made, and the undoubted advantages that they possess are seen to be attended by economy.

Two diamond drills have been imported during the year. One from England to be used for exploring in Cumberland, and the other from the United States in Pictou County. The work done by them will be mentioned when treating of the several undertakings in the different counties. The two drills owned in New Brunswick were not employed to any great extent or to much advantage during the past year.

For shallow holes, for blasting, percussion drills are most in favour. In the United States the Ingersoll drill seems to be preferred, and it is the most highly thought of by the Government officials in charge of the excavations at Hallet's Point for the improvement of the navigation of Hell Gate.

In Great Britain the Admiralty, after several tests, have adopted the Kamotomon drill to be used in the construction of the harbour of Haulbowline, Queenstown. The same drill has been selected at the royal mines of Prussia and Saxony. In this Province no such machines are now in use, but there are operations going on at which they could advantageously be applied, and their introduction may shortly be expected.

To drive these machines compressed air is generally preferred. It has long been recognized that compressed air is the power best fitted for

coal cutting machinery and its use is extending in the application of power underground to drive locomotives instead of using stationary engines for the haulage. The liberation of fresh air instead of waste gases in the workings is another inducement, as it is a direct aid to the ventilation, while the use of steam is often a cause of much inconvenience on account of the heat and loss of power from condensation in the pipes. To extend the application of compressed air, great attention is now being bestowed on the improvement of compressors.

THE *ÆROPHORE*, mentioned in the last report, as an apparatus which enables men to work in deleterious gases, has been further tested and has given every satisfaction. It has been adopted in some districts in England and several have been procured and so placed as to be ready in cases of emergency.

PORTABLE FIRE EXTINGUISHERS.—At several of the pits in Pictou County, these serviceable appliances have lately been introduced and conveniently placed for use above and below ground. They have been found most useful at the inception of fires which with but the ordinary facilities for extinguishing, might otherwise have proved serious conflagrations. Strictly speaking these instruments are more “flame” than “fire” extinguishers, for they rely more on the sudden evolution of a large volume of carbonic acid gas from a comparatively small quantity of water in which the gas is dissolved, than on the vaporization of the water thrown in contact with the incandescent material. The discharge of the incombustible gas at the place of combustion drives back the atmospheric air and so the flame is extinguished. Then if the burning material be not heated to that degree that the re-admission of air does not renew the flame, the fire is of course extinguished. In mines where there is gas evolved from the face and the dry dust is liable to ignition, there, as a precautionary measure, as long so the use of powder is permitted, the acquisition of these portable extinguishers is desirable.

DIRECT ACTING STEAM PUMPING ENGINES are getting more and more in favour at the collieries, and are largely replacing the old-fashioned, more cumbersome bucket and plunger pumps, for removing such quantities of water as are ordinarily met with in mines. They are now used to discharge water in volumes as great as 9000

gallons an hour from depths of 400 feet. At the Nova Scotia Colliery, a still higher duty is exacted, a pump with a twenty-inch cylinder and six-inch plunger, forces water through a column 1150 feet long and 560 feet high. To this pump a late improvement has been added, which is, the immediate discharge of the exhaust steam into the suction pipe. The advantage of this arrangement is, it is claimed, besides the removal of an otherwise great nuisance, exhaust steam in the workings, an actual saving of power. The same arrangement was in use at the sinking of the Sterling pit at Glace Bay and the same convenience and advantage were experienced.

An objection to the use of direct acting steam pumps is that they are more liable to be "lost" by a sudden influx of water than the ordinary bucket or plunger pump, which continue to work so long as the valves keep in order. This objection can be removed by the employment of compressed air in place of steam as the motive power.

PICK HANDLES.—A pick-handle may seem a small thing to bestow much thought on and yet it is a matter of some solicitude to the collier who, in the course of his day's work may require as many as six or even eight picks. Those now in use are made by hand, of birch or maple; and as is to be expected when supplied in large quantities of a varying size and finish. Mr. Merriman, of Pictou has lately set up at his factory, a machine that is specially adapted for turning such irregular work as spokes and the various kinds of handles. He has supplied some of the collieries in his neighbourhood with pick handles, which, when made of well-selected wood, have given satisfaction to both masters and men. Our ordinary woods, though in general use, are not very good for this purpose, and as much expense attends the fitting and replacing of broken handles, it is most probable that the use of good Canadian rock maple or white ash, or better still, second growth hickory would pay, though the first cost would be greater.

In the Pictou field the introduction of machine made handles was followed by a considerable reduction in the number required, where, during busy times, as many as one hundred dozen a month are used. These handles being all alike do not entail on the workman the necessity of adapting his touch to each that he uses, as one made by hand requires, but one replaces another

without any sense of awkwardness. So much depends in cutting coal on truly delivering the blow, that, although a skilled collier will unconsciously correct the wavering due to a bad handle, he naturally prefers a good one, and is strongly induced to destroy those that are inferior, and so swell the cost of this item of colliery expense.

EXPLOSIVES.—Attention was directed in previous reports to the rapidly extending use of explosives more powerful than black powder for aiding the operations of the miner, and special mention was made of Dynamite and the benefits likely to be derived from its introduction into the mines of this country. A quantity has since been imported by F. D. Corbett & Co., the agents in the Maritime Provinces for the British Dynamite Company, and already the sales can be spoken of in tons. Its chief employment has hitherto been at the gold mines, though it is also used with marked effect at the sinking of coal pits and the driving of stone drifts.

In the article in this report relating to gold mining a comparative statement is given from a test made of the relative advantages of Dynamite over powder, and the saving is shown to be as much as thirty per cent. At other mines the economy claimed is even greater. Be that as it may, the one statement is sufficient to show that the use of dynamite does, in some cases, cheapen the cost of gold mining, and consequently enable some mines to be worked at a profit, which otherwise would lie idle.

As is naturally to be expected, some diversity of opinion prevails respecting the invariable economy of its use, and doubtless there are conditions and circumstances in mining, where a disruptive, rather than a shattering force is more advantageous, and there ordinary powder is preferable. As with powder, experience is essential to enable the miner to apply it to the greatest advantage under the different circumstances in which it is used. The nature of the rock to be blasted, has to be studied, and the weight of the charges ascertained by experiment.

There is one point that has to be borne in mind when using dynamite in this country, that has not to be considered in England, that is: that our mean annual temperature happens to be very near to the freezing point of dynamite, 42° Fahr., and that consequently cartridges exposed for some time to the chilling in-

fluences of wet ground, within the first hundred feet or so of the surface, are weakened in their action from partial congelation. But as dynamite freezes slowly, ample time is given under ordinary circumstances for the discharge of the shot with full effect.

It should not be forgotten that in winter the thawing of dynamite should be done with care and according to the printed instructions. A marvellous escape from the consequences of recklessness is reported from a gold district, where a miner placed four cartridges on a stove to thaw. As the nitroglycerine melted in minute quantities it exploded, and the cartridges popped about like parching peas; but the miner remained indifferent to these warnings until a cartridge jumped about a foot from the stove, then he realized his position, and knocking them off, left.

A description of this compound was inserted in the report of 1872, and instructions for its use are given in the circular of the agents.

Other explosives belonging to the same class, having nitroglycerine for their basis, are used with more or less advantage, of which lithofracteur seems to have the preference. But this material for industrial and blasting purposes is regarded as very inferior to the regular dynamite by the Commission on Fortifications, which, authorized by the Minister of War of France, published a memoir by the commanding officer of the Engineer Corps, containing a paper on "Dynamites," which detailed the results of experiments on the value of the blasting powders containing nitrogen.

In England the compressed gun cotton of Dr. Abel, has found more favour since it has been discovered that it can be exploded by means of a detonator when wet.

HANDLING COAL.—In the Anthracite fields of Pennsylvania the most noticeable feature of a colliery is the breaker where the coal from the pit is sized, cleaned and often washed to make it free of dust. The advantage derived from careful manipulation is well recognized, and is proportionate to the care bestowed.

With bituminous coal the advantage is not so apparent, and this in part accounts for the neglect which seems almost invariably to be in the inverse proportion to the amount of care requisite. The more friable nature of this mineral cannot be altogether guarded against, even by the most careful handling, and a

certain amount of disintegration will take place every time it is removed. But because this is so, it is most unwise to neglect care altogether and treat coal as if size were a matter of the last consequence. Something has been done at some of the collieries, but much more can be done to save brittle coal from breakage.

“The South Wales coal is of a brittle character, and at Cardiff it has been found necessary to take special precautions for reducing the loss by breakage that occurs in discharging the coal wagons into vessels' holds. The first appliance for this purpose is the anti-breakage crane. This is a square iron bucket holding one ton of coal, made hopper-shaped, with a hinged flap for discharging at the bottom; it is suspended from an independent light jib crane, fixed at one side of the tip frame. In commencing the loading of a vessel, this bucket is filled from the shoot, and then lowered to the bottom of the hold, and emptied by pulling up the bolt that secures the flap door; the process being repeated until a conical heap of coal is tipped high enough to nearly reach the hatchway. The shoot is then allowed to discharge freely, and delivers close down upon the heap, so as to prevent any breakage of the coal by a vertical drop. The point of the shoot is contracted to check the fall of the coal down the incline, so that the shoot is choked up by the coal, and the discharge from the point requires a little assistance by hand, and is thus kept under control whilst the bucket is being filled. * * * * The buckets are also used for discharging ballast or ordinary merchandize, and for filling into wagons the small coal that passes the screen in the shoots on to the vessel's deck.”

At the West and East docks the balanced tips are used; at the New Basin improved hydraulic tips have been introduced but which being unsuited for this climate need not be further referred to. “Each balance tip is capable of shipping 560 tons of coal per day of ten hours. This tip consists of a suspended cradle or platform sliding in vertical guides, and supported by balance weights connected on each side by chains passing over pulleys at the top of the framing upon which are brakes for controlling the motion of the cradle.

The balance weights are sufficient to raise the cradle and empty wagon, but not equal to the load when a full wagon is upon it. The wagons are each discharged from an end door into an inclined

shoot extending over the hatchway and having screens in the bottom for separating the small coal. The cradle and full wagon are lowered by means of a brake until the wagon is at the top of the shoot and sufficiently tipped for discharging the coal. The brake is then released, the cradle and empty wagon ascend, and the wagon is run off into a siding. The level of the shoot is adjusted to the actual height of each vessel, so that no greater height of fall is given to the coal in any case than is necessary for getting it into the hold, in order to reduce the breakage as much as possible. For this purpose the butt of the shoot, where attached to the frame of the tip, is made to slide in vertical grooves, and is supported by chains, which can be raised or lowered by a hand winch, the greater portion of the weight being counterpoised by a balance weight. The point of the shoot is also carried by similar adjustable chains, so that the inclination as well as the height of the shoot can be changed as desired. Notwithstanding all these precautions, the proportion of slack that is found in the coal when the ship is discharged at the end of the voyage, is generally too large in amount to be satisfactory, and is evidently due to the want of care in trimming the coal. To practically test this supposition, a vessel was loaded at the Bute docks by means of barrows filled direct from the shoot and lowered into the hold and wheeled at once into the far end so as to avoid any subsequent trimming. The result was, that the coal was delivered in such exceptionably good condition, that the extra cost was much more than covered by the reduction in loss from slack."

In using the balance tip, the ordinary method of tilting the wagon is to attach a suspended chain on to the tail end and then lower the cradle by the brake. This entails a loss of height which is a serious matter as the size of vessels loading coal has gradually increased. But by having the platform of the cradle centred on trunnions, and controlled by a sector and endless screw, side, as well as end discharging wagons can be used with less loss of height than by any other method.

Many improvements have been made in the methods of handling coal since the first cargoes were exported from the Province, but seeing what has elsewhere been done is strongly suggestive that there is still room for more. At the Pictou Collieries more attention has been given to this subject than at those of Cape

Breton. The coal being harder it more plainly shows the care bestowed on its preparation.

To reduce the breakage to which coal is subject when thrown, as it ordinarily is, violently from a box on to the screens, tubs with end doors are frequently used, but these are objectionable on account of the increased expense. A late patent by a Mr. Rigg of England does away with the objectionable features of both systems for it allows the ordinary tub to be used. His patent tipping machine consists of a wrought iron rotating frame, like the common cradle, so balanced that it is self-acting both in its forward and backward movement and under the control of a brake. The improvement consists in the simple addition of a projecting plate on the front of the cradle which, rotating with it, receives the coal from the tub and carries it down to the screen where it slides off the plate without a fall on to the bars.

The screening at some mines is better done, is more thorough, than formerly, and the slack is put into more marketable shape by the extraction of the dust. To still further improve the quality of the slack it is proposed to wash it at the Nova Scotia Colliery and it is likely the proposal will be carried out.

For loading the vessels from wagons, shoots are replacing the antiquated drop, still the appliances for this purpose are crude in comparison with the arrangements adopted at Cardiff. The style of wagon too in use is, unfortunately, not the best adapted for saving brittle coal from breakage. Hopper shaped wagons are in all but general use and it is a pity that with the experience of England for guidance, flat cars with end or side doors had not been adopted instead of wagons with bottom doors, for the latter letting the coal down with a drop helps to break it. They are also more troublesome to manage, and slow to empty when the coal is frozen in them during cold weather.

The consideration of screening naturally associates in the mind the uses to which the products can be put. At some of the mines all the slack produced is consumed about the colliery. At others much is left underground or in waste heaps on the surface. The slack of the Pictou coals is mostly all disposed of, but that from the more tender coals of Cape Breton has yet to find a market, at least the greater part of it has, for the quantity sold is small when compared with the total production. With the exception of the

Gowrie Colliery, at no place in the Island is the slack cleaned and prepared for market. During the last year 8671 tons were sent to the United States, and if there is a demand for that quantity it is natural to suppose that a little more care in the preparation, at an expenditure of but a few cents a ton, would extend that market. Were the slack of other coals also prepared and freed from dust, doubtless the demand would increase.

There is a use to which the slack of the soft coals of the Western States is put which might well be encouraged here;—its consumption in base-burners for heating halls and offices. Here in the East we have been in the habit of looking on anthracite as the only kind of coal that will burn in the base burner a stove highly prized for its cleanliness, for the little attention it requires, and for the steadiness with which it emits the heat. But in the West a base burner has been invented and used for years, that consumes soft coal and has every good feature that the hard-coal burning Beacon or other stove possesses. This stove, the Dubuque, has been much improved of late, and within the last few months quite a number have been imported into Halifax and Pictou, and, when used with Pictou slack, have given, great satisfaction. With other non-eating coals as those of the Emery and New Campbellton Mines, it can probably be used with equal advantage. It is very complete, and brings into almost perfect practice the principles that have long been recognized as theoretically correct for the absolute combustion of bituminous coal. As in the ordinary base burner, air is supplied to the ignited fuel through the ash pit, and the magazine is placed directly over the grate. Round the magazine there is an additional annular space from which pours a thin stream of fresh air directly down on the coal burning in the grate and supplying oxygen completes the combustion of the half consumed gases.

As the comfort and advantage of using base burners become known the consumption of anthracite increases although it costs 50 per cent. more than our own domestic coals, and double the price of slack, which can be utilized for the chief purpose for which hard coal is imported. A reference to the table of imports will show how extensive this trade is already becoming.

Now in Nova Scotia with the variety of bituminous coals we possess there should be no necessity for importing that class of coal at

all. Coke can be made to replace it at the founderies, and slack with the Dubuque base burner, for heating purposes. Every exertion should be made by our mine owners to legitimately retard the growth of this trade by showing that our coals can supply all the wants of the people. But if they are quietly allowed to supply themselves with the ordinary base burner and get in the habit of using hard coal, the difficulty of eradicating it from the list of imports will be greatly increased. A combined action should be made to practically show that our own soft coal can give to the consumer every advantage that the foreign hard coal possesses, with the additional important advantage, economy.

THE MINES REGULATION CHAPTER, now in force, calls for the special attention of mine managers to certain matters of routine which, as a general rule, were, outside of the Pictou district, not complied with by managers until their attention was personally called to the necessity of so doing. The inattention probably arose not so much from unwillingness as from that ordinary disposition to pay little heed to anything more than the general tenor of such a statute, which is read after the manner of the moral reflections in a novel;—glanced at, recognized as all very right and proper for the guidance of the masses, but quite unnecessary for the consideration of the individual.

Hitherto it has been thought sufficient to admonish when neglect appeared to arise from inattention alone and not from a spirit of opposition. But there is still a want of familiarity with the special requirements of the chapter, and an absence of that regard which must be held, so that due advantage be obtained from the existence of such a statute. This, it is hoped, will in time be remedied although while any man is permitted to occupy the responsible position of manager without being required to have had a special training, the full benefit of the Act cannot be expected. And the sooner a system requiring managers to hold certificates of competency is introduced, the sooner will the standard of mining in this Province improve, and favourably compare with those of other countries.

It will doubtless be interesting for those now holding such positions in this country, to know what is required of candidates for manager's certificates in England, and a specimen set of examination papers is here appended.

THE SUBJECTS UPON WHICH CANDIDATES ARE EXAMINED FOR
CERTIFICATES.

1. The Coal Mines Regulation Act, 1872. General knowledge of.
2. Ventilation. Theoretical and practical knowledge of.
- 3.—Modes of working coal, ironstone, and other minerals, having reference to the nature of the roofs and pavements.
- 4.—Sinking, fitting, and pumping, with theory of steam-engine.
- 5.—Winding, haulage, and strength of materials.
- 6.—Underground surveying and drawing.
7. Arithmetic up to fractions, with calculations of areas and velocities.

The questions put at the Examination for Certificates of Competency under the Coal Mines Regulation Act, 1872, held at Edinburgh, Nov. 1 and 2, 1873, were:—

COAL MINES REGULATION ACT, 1872.

- 1.—When underground workings are approaching old wastes of which no plans have been kept, what special dangers are the workmen exposed to, and how would you provide against them.
- 2.—State shortly the general rules as to the use of gunpowder or other explosive material in mines where inflammable gas has been noticed.
- 3.—What is the requirement of the Act as to the number of shafts in use at each mine, and state shortly the exceptions to it that may be allowed?
- 4.—In mines where there is inflammable gas, what special precautions are to be observed by the workmen and by those in charge of the mine?
- 5.—Give a short statement of the requirements of the Act regarding man-holes or places of refuge on underground roads?
- 6.—What limitations does the Act impose on the employment in mines of young persons between 12 and 16 years of age?

VENTILATION.

- 1.—Explain why artificial ventilation is more reliable than natural. Describe the different modes of producing artificial ventilation?
- 2.—For an extensive but shallow working, whether would you adopt a fan or a furnace, and give your reasons?
- 3.—How do you measure the velocity of an air current, and at what velocity would you have air travelling through the workings?
- 4.—Give your reasons for making air-courses as large as possible. Explain the advantage of splitting the air?
- 5.—Describe the barometer, and explain how it indicates the atmospheric pressure. What is a water-gauge, and of what use is it?
- 6.—Sketch what you consider a good furnace for a pit 60 fms. deep, with 100 men, giving its dimensions and relative position to the shaft?
- 7.—Under ordinary conditions as regards gas, what quantity of air would you have circulating in a pit with 100 men: and what is the least

dimensions you would have the air-courses. Give observations regarding the necessity of having the air-course *uniformly* large.

MODES OF WORKING COAL.

1. Explain the ordinary conditions for adopting the long wall and the stoop and room working?

2.—In a seam having a dip and rise of one in six, and the direction of the plane of the coal being to the full rise, sketch what you consider a good form of long wall working for it, having regard to the ventilation, direction of the drawing-roads, &c.?

3.—Under the same conditions, give sketch of a stoop and room working by which the greatest percentage of the seam can be got out.

4. In a 4 ft. seam of coal 80 fms. deep, what size would you make the pillars, having regard to the ultimate extraction of the greatest quantity of coal combined with safety to the workmen?

5.—Give a rough section showing the different seams of coal in your district?

6.—Under ordinary conditions as regards roof and pavement, give your observations on the cost of working a 4 ft. seam of coal by stoop and room, and a 2 ft. seam by long wall, embracing the outcost necessary in each.

SINKING, FITTING, AND PUMPING.

1.—Sketch what you consider the best form of a shaft, 100 fms. deep, for an out-put of 300 tons a day, including ordinary provisions for pumps, and showing arrangement of slides and cages, with dimensions?

2.—Explain how you would prevent water met with near the surface from getting into the shaft.

3.—How many gallons are there in 1200 tons of water, and describe the general arrangement and size of pipes for lifting that quantity daily from a pit 80 fms. deep?

4.—Describe the class of engine best adapted for the above work, size of cylinder, stroke, and strokes per minute.

5.—Explain fully the advantage in a deep shaft of having a series of lifts instead of one long lift to the surface.

6.—Explain the action of a syphon, and its use and application in draining mines.

7. State the various methods you know of pumping water out of a dip working.

8.—Describe the best kind of boiler for the safe and economical production of steam.

WINDING AND HAULAGE.

1. Explain the forces acting on a self-acting inclined plane. Compare the friction of ordinary tubs on tram rails with the friction on a well made railway.

2.—Under the usual conditions of tram rails and tubs, what is the flattest gradient for a self-acting inclined plane 300 fms. long, to pass 100 tons in 8 hours? Sketch the best arrangement of it at the top.

3.—Explain the best mode of drawing coals along a level road, or one not dipping sufficiently to take away the rope.

4.—Explain why conical drums are necessary in deep shafts.

5.—Whether are chains, wire ropes, or hemp ropes preferable, and give your reasons. Giving the breaking strains of a rope, what is a safe working load for it?

6.—State from your experience what is the cost of haulage underground per ton per mile. How does it compare with the cost of a mineral railway above ground? Give your observations on the different modes of haulage known to you, and how you think they might be improved.

7.—Accidents frequently happen on headings where the loaded tubs are taken down with snibbles, by the full tub running into the one before it or into an empty one coming up; how would you remedy this, and still retain the use of snibbles.

8.—In speaking of machinery, what is meant by horse-power?

SURVEYING AND DRAWING.

1.—Sketch on paper as near you can the following bearings of a survey 82° N. E., 68 links, 51° S. E. 95 links, 63° N. E. 79 links, 20° N. E. 97 links, 35° N. W. 87 links, 87° N. W. 140 links, 52° S. W. 140 links and 48° S. E. 85 links.

2.—Describe the compass, and explain the circumstances under which it is unreliable.

3.—Explain what is meant by the scale of half-an-inch to a chain.

4.—Describe the process of surveying underground.

5.—Describe how you would plot the same survey on paper, and name the instruments you would require to use.

6.—Why is it necessary to make deductions from the measurements to the rise and dip in steep workings, and how would you find the correct measurements?

7.—Suppose you were driving towards an old waste which is shown only on a plan 20 years old, explain the precautions to be taken as regards the meridian.

ARITHMETIC.

1.—Add together 507 tons 13 cwt., 2 qrs. 12 lbs., 1670 tons 15 cwt., 1 qr. 8 lbs., 47 tons 14 cwt., 3 qrs. 14 lbs.; and 498 tons 9 cwt., 2 qrs. 7 lbs.

2.—How much would be required to pay 75 men a fortnight's wages at the rate of 27s. 4½d. each per week?

3.—How many cubic feet of air will pass per minute through an air course 5 ft. by 7 ft. when the air current is travelling at the rate of 20 yards in 15 seconds?

4.—What weight of material will have to be raised in sinking a shaft 15 feet by 5½ ft. and 40 fms. deep, supposing it averages 130 lbs. per cubic foot?

5.—How many gallons of water will be pumped in an hour by an engine making eight strokes of 7 ft. each per minute, the diameter of the pump being 15 inches?

6.—How much power would it require to send 10,000 cubic feet of air per minute through an air-course having an area of 40 square feet, and how much would the power require to be increased to do it if the area of the air-course was only 20 square feet.

PLANS.—Among the special requirements of the Mines Regulation Chapter which need careful and close attention, that relating to the keeping of plans of underground workings is well recognized as essential, though it is not so thoroughly complied with as it might be, few of the plans being so complete as to give, as they should, every information requisite for a thorough understanding of the workings, without necessitating any verbal explanations whatever.

It may not be amiss to mention what an accurate plan should show. To be complete it should give the position of the pits in relation to the nearest boundary of the estate; the position of the shafts, staples, inclines, goaves, the furnace, &c., the permanent stoppings, over-casts, regulators, and doors; the direction of the faults or steps and their extent; the true and magnetic meridians, the scale on which it is constructed, the date of the last survey, and a section, giving the dip of the measures with the relative positions of some points on the surface with others in the workings.

The necessity for complete and accurate plans may not, at first sight, seem to be great, as most of the pits in this country are scattered, yet a little consideration will recall to mind the proximity of some, and the relative position of others to large bodies of water, in which cases it is requisite to know the thickness of the intervening measures to ensure safety.

It will be sufficient to mention one case in the Province to show that not only should plans be perfected, annually or semi-annually, as the custom may be, but that also a record should be kept that would enable (as the law requires,) the further extension of the workings, since the last survey was plotted, to be at any time laid down with approximate accuracy.

After the Drummond explosion in May, 1873, it became a matter of much importance to know the thickness of the coal left as a barrier between the adjoining workings: for it was desired to flood the mine and so extinguish the fire. The officials of the colliery who could make the information positive and complete were among the lost, and the record book of monthly measurements was, without their aid, unreliable for the

purpose of showing the extension of the workings since the last survey was plotted on the plan, consequently no reliance could be put on the thickness of the barrier being equal to withstand a head of water.

It would also be well if a rough working plan were kept by each undermanager on which he could note the changes made in the air courses as the workings progress, and so be enabled to study to supply the air to the best advantage.

WEIGHING —In previous reports mention was made of the different systems in vogue for estimating the quantities of coal on which royalty was payable. On this subject little need be at present said. It may, however, not be amiss to remark that some of the coal owners, who considered the requirement that all coal should be weighed was burdensome, now find it for their advantage to weigh all coal shipped to Montreal and other ports, where, they believe, a system of allowances detrimental to their interests is in practice.

Custom has permitted coal miners to regard the royalty as not payable until sales have been made, while a strict rendering of the terms of the Act, would require the royalty to be paid on all the coal extracted from the mines, and a drawback to be allowed on all slack separated, and all coal consumed for colliery purposes.

Were the practice in accordance with the strict rendering, it would necessitate the weighing of all the coal raised from the mines, and enable the payment to the men to be by weight, instead of by measure, as is the more common practice. The systems of paying otherwise than by weight are further objectionable, because they offer premiums to trickery and laziness. When the tub or box is taken as the measure, a knowing loader will so trim the coal as to leave spaces unoccupied and give to the tub the appearance of being full, or he will break up the lumps, knowing that small coal has a greater bulk per ton than large coal. When the payment is by yardage, on the measurement of the space excavated, and there is in the seam fireclay or stony coal to be rejected, much good coal is often wasted and thrown back with the refuse by the loader who has no direct interest in separating the good from the bad.

This objection is especially felt at the Pietou mines, where the seams pitch steeply, and there is much refuse to be rejected. The managers of these mines recognize the desirability of changing their

system and to pay by weight and not by measure, but they are unable at present to combine for this purpose. The opposition on the part of the workmen to this change offers a strange contrast to the anxiety of their fellow colliers in England to have the system compulsory as they at last obtained, after much resistance, by the passing of the Act of 1872. To say the least, it is interesting to note the directly opposite conclusion arrived at by separate bodies of men having one interest in common, and influenced by the same desire to get the highest wages for their labour. It shows how carefully local prejudices should be considered before the true value of objections raised, even by large bodies of men, can be determined.

At Sydney mines, where this system has been in practice for some years, satisfaction is given to both masters and men, and it is one that the country is equally interested in with the owner as it affects the yield per acre.

COAL MINING.

CUMBERLAND COUNTY.

Comparing the business of this county with that of former years a satisfactory increase is noticeable. The sales for the past year having been 88 per cent. in excess of those of 1873, and amounted to 49,599 tons. Had it not been for the late general depressed condition of the trade the projected railway from Spring Hill to Parrsborough would doubtless have been undertaken, and in a year or two given further facilities for the development of the business of the country. As it is, the present means of transportation are not adequate for a rapid or even greater extension of the trade; Dorchester, the present shipping port for Spring Hill coal, is too far away for economical shipment, and the cost of rail-carriage to St. John is too great to allow of much competition in that market with the cheaper seaborne coals.

The revival of the trade in 1873 again drew attention to the mines once worked on the Maxcan and Hebert rivers, but no steps have as yet been taken to practically re-open them. Mr. Hibbard is opening a seam, by a slope now about 100 feet in depth on the area leased to Gilbert Seaman, underlying that once worked by the Victoria Company on the Herbert river, and he considers it is the continuation of the Joggins Hard Scrabble seam.

Messrs. Smith and Blight have been diligently prospecting on their area; lying between the Styles mine and the St. George colliery, and have formed a company, "The New Dominion Coal Company," to work the property. They have opened the seam in a brook ravine not far from the eastern boundary of the area, and have driven an adit in a westerly direction, under the hill a distance of three hundred feet. The seam dips at an angle of 44° and is about five feet thick, with a 20 inch parting of firm clay. The coal, they report is much liked in Amherst as a house coal. Twenty four feet to the deep of this seam is another about three feet thick.

A good deal of prospecting was done in the spring on the Hibbard areas by the Spring Hill and Parrsborough company, and the measures shown to be sharply deflected to the southward and eastward. The seams were not traced more than a quarter of a mile when they were lost, under the heavy surface cover. Evidently the further extension of these Spring Hill beds, if their continuations exist at all in this direction, will be proved with great difficulty and much cost.

Mr. Livesey still indomitably perseveres in his search for coal on his areas, and has imported and set up an English made Diamond Drilling Machine, that works with great precision. He has kindly furnished the following interesting memorandum that helps to give an idea of the capacity of the machine.—“Referring to your recent enquiry I may inform you that the total depth of borehole No. 2 made with our English Diamond Boring Machine was 715 feet: $5\frac{1}{8}$ inches in diameter at the top and $3\frac{1}{8}$ at the bottom. The time occupied in boring was 48 days at a cost of about \$1160, including repairs and renewal of diamonds, but exclusive of interest, depreciation and royalty. As a general rule, of course, the cost of boring increases with the depth. Thus the cost of the fifth hundred feet was more than twice that of the first hundred. But the rate of increase may be modified by the nature of the strata for I find that the sixth hundred feet was only fifty per cent. in excess of the first. The greatest depth bored in any one day was 36 feet. The average number of persons employed was five. The cost of the machine with 1000 feet of rods was about \$8,500 in England or say \$10,000 erected in Nova Scotia. The bore hole, after passing through slate and sandstones, ended in the conglomerate.”

When considering the first cost it should be remembered that the value of such an instrument consists chiefly in the thoroughly satisfactory information it gives of the measures explored. A core of every stratum can be extracted and as critically examined as can be done by means of a pit which allows the miner to place himself in immediate contact with each of the measures sunk through.

At the other end of the Spring Hill district, valuable explorations have been made on the Black areas, and some of the small Black river seams proved to extend for over a mile to the

westward, and to be curving round apparently to conform with those of Spring Hill. One seam has been proved to thicken to something over three feet which may make it a workable bed.

COLLIERIES.

SPRING HILL.

Coal has been won from the Hall slope, which takes the strip along the crop of the seam outside of the General Mining Association's area, while the more permanent establishment at the East slope has been preparing. Much work has been done in building dwellings for the men, erecting workshops, clearing a coal floor, finishing the railway, and otherwise getting the colliery in shape for continuous and systematic working.

The East slope has been sunk on the seam, some 822 feet, at an inclination of 40° , and a winding engine with an eighteen inch, cylinder and nine foot drum erected. This engine has, what is unusual on colliery machinery, wooden cogs on the follower wheels and the drum revolves with less noise than the ordinary gearing, iron on iron. Water for the engines has been brought through wooden pipes a distance of 2300 feet.

SCOTIA.

The working of this colliery remains still on a small scale commensurate with the local demand.

JOGGINS SOUTH.

The distant workings of this colliery have been closed, and operations confined to the new lift on the extension of the slope. Second counterbalance ways have been driven up 400 feet distant from the first, and the pillars that were left from the workings off the first have been removed and the roof allowed to settle. The quantity of fire clay from the parting that has to be thrown back into the waste favours this mode of working.

The shipping facilities have been improved by the addition to the pier of a block, built by the Government grant of \$10,000, running out from the shore 160 feet opposite the end of the wharf; thus making a dock in which vessels can lie more secure than they hitherto could.

Instead of lowering the coal wagons by a counterbalance from the top of the cliff, and emptying them from the wharf, as the

practice has previously been, the coal is now emptied at the top into a shoot 140 feet long inclined at an angle of 25° , and the shoot is kept full. The coal is drawn off as required, regulated in its descent by checks and doors.

A furnace 6 feet wide, placed at the bottom of the old shaft, has improved the ventilation.

PICTOU COUNTY.

During the first nine months of the year the business of this county was fair but never brisk. The whole year saw an improvement to the extent of 13,942 tons over the previous season, but contracts, that otherwise might have been had, were lost by the coal owners holding off for the prices of the year before. Late in the year a reduction of 12 per cent. in the wages of the men led to a strike which somewhat further reduced the quantity sold.

The borehole in search of coal below New Glasgow was continued with a Diamond Drilling Machine to a depth of 734 feet, when mottled marls, such as are found below the coal, were struck. At the same time a run of sand occurred and the rods became jammed in the hole, and when the endeavour was made to withdraw them, they broke and 250 feet together with the bit and core-barrel were irretrievably lost. A run of sand once or twice took place before on the withdrawal of the rods, and to save expense the hole was not tubed, but only cleaned out, and the boring resumed. Mr. Logan now proposes to test the measures near Cariboo Island where some coal has been found. He has lately put down another hole at the Hardwood hill which shows the cheapness and serviceableness of the American drill. His account of its performance is here added.

“ We began to bore on the 21st December and up to this date—the 29th January—have worked 24 days and bored to a depth of 534 feet. The measures pierced have been fireclay and freestone beds. The best day's work, when using the hollow bit and taking up the cores, was 27 feet, and when working with the solid bit, 31 feet. The machine cost \$5,000. It is operated by one man and a boy, but owing to the late cold weather we have had to have an extra hand to keep the pipes from freezing at night.

EXPENSES.

Moving machine and erecting shed.....	\$111.50
Wages to date.....	138.00
Fuel.....	90.00
Interest, renewals, &c., @ 50 cents.....	267.00

Total cost boring 534 feet..... \$606.50

An average cost of \$1.14 per foot. Doubtless the same work could be done cheaper during warm weather."

ACADIA.

The workings of the new lift have been pushed on and ample room made for a number of men. A return air course has been left up the side of the barrier and the pillars have been worked back toward the slopes. The pillar working has been more satisfactory and profitable than hitherto, a larger percentage of the coal being obtained. The 7 pillars in the lift are worked in one face to the full rise taking the upper 9 feet and leaving the bottom bench. After the pillars have been worked back some 60 to 70 feet, the roof is allowed to fall and settle and then another slice is taken off the pillars leaving a few yards untouched to maintain the roof at the edge of the broken.

A new eight-inch plunger pump has been put in the pit to replace one of six inches. The ventilation of the mine has been improved, more attention having been of late bestowed on this important matter.

On the surface the sidings newly arranged give more room for full and empty wagons. The company have purchased a tank-engine and now deliver the wagons to the Provincial railway at Stellarton to be taken thence to the landing by the Government locomotives. This gives more satisfaction than the old arrangement by which the railway undertook to take the coal directly from the screens.

ALBION MINES.

At the Foord pit the levels have been further extended and the north level has cut a fault that does not show in the workings immediately to the rise of it. Its course is nearly parallel to the other faults of the section. The stone drifts to intersect the deep seam are still in course of being driven.

On the surface the machine shops have been collected under one roof near the Fan so that one engine may drive all the work. New screens have been put up for the bank coal and the regular screens covered in to protect the men when working during broken weather. The weighing scale has been removed to the wharf, the better to comply with the requirements of the Mines Regulation Chapter respecting weighing.

At the Cage pit the sinking of the incline plane has been continued and the mine drained by means of a special steam pump which receives its steam through 900 feet of pipe. The boiler and the more exposed pipes are served with Spencer's patent, the rest with straw, by which means 60 lbs. pressure on the boiler give 40 lbs. at the pump.

The mine is worked in the ordinary way. The rooms are driven horizontally, and the coal is lowered to the main level by means of counterbalances.

561 tons of Coke have been made, and four new ovens are in course of erection.

INTERCOLONIAL.

The new, or No. 4, slope mentioned in the last report as started to the south of the fault that bounded the old workings, was continued to a depth of 1100 feet and coal was won on either side between the faults. At the same time the old workings were in part opened up. An overhead brattice was carried down No. 1 slope, and the crosscuts built up as the work of opening out the slope progressed until the water was reached at a depth of 600 feet. Then the old workings on the north side where there had been no fire were opened and swept free of after damp. The coal that had been stowed in the bords in this part of the mine was recovered and the two lower rows of pillars robbed. Simultaneously the work of opening the south side was cautiously conducted and is still progressing, happily without finding any indications that fire exists in the crop workings on that side. When all doubt on this important matter is removed the work of pumping out the water which now fills the lower part of the mine will be next undertaken. It is expected that in the course of the year the whole of the old workings will be made accessible.

While the work of exploration was going on the bodies of some

seventeen of those who were lost were recovered. The rest are supposed to be under water, some in the slope and the others about the bottom of the pumping shaft.

The fierceness with which the fire must have raged, is indicated by the depth to which the coal was coked, which in places on the sides of pillars is to a depth of nine and ten inches.

On the re-opening of No. 1 slope the working of deep seam was abandoned.

NOVA SCOTIA.

On further extending the slope to the deep, a fault was cut which does not show in the workings above, and which appears to run nearly parallel to the boundary line. The new extension is 470 feet, making the total length of the slope about 1600 feet.

The system of working the pit has been changed. Instead of carrying the boards to the full rise and letting the coal run down shoots into tubs standing on the levels, the rooms are now driven horizontally, the coal filled at the face, and the tubs raised and lowered from the several rooms by means of counterbalances. The breakage is much less by this than by the old method.

Some changes have been also made in the machinery. The winding engines which before stood with the cylinders nearest to the mouth of the slope, have been reversed to allow the ropes to lead direct, and to save them from making reverse bends which are so destructive of the life of the rope. The gauge of the pit roads has been reduced to 2 feet 9 inches to enable the tubs to be more conveniently run in to the rooms.

An additional boiler of a similar description to those in use has been added and a machine shop with a separate engine and lathe has been attached. A special steam pump 20 inch cylinder, 30 inch stroke and 6 inch plunger, has been placed below to discharge the water of the mine. Steam is carried down to the pump which forces the water in one lift to the surface, a vertical height of 560 feet.

A new overlying seam has been found on the smoky town road where the line separating the Halifax and Nova Scotia areas crosses, and a trial pit, sunk on the seam to a depth of 15 feet, shows some 4 feet 9 inches of pretty good coal.

VALE.

During the year this colliery got into operation and shipped some 38,000 tons. On the surface the accommodation for workmen was increased and some thirty-four double blocks and seven blocks of four tenements each were completed. A locomotive was purchased to run the wagons to and from the siding at New Glasgow, and the pier finished below the Pietou Landing for the shipment of the coal.

Under ground, the rooms have been driven horizontally 15 feet wide between pillars left 12 feet wide, and 60 to 70 feet long. Two counterbalances have been put up on each side, one to each landing.

The pit tubs adopted are 4 feet 9 inches long by 2 feet 8 inches wide, and 2 feet 1 inch high. They have 10 inch wheels; with a 2 foot wheel base, and run on a 2 feet 5 inch gauge.

Mitchell and Barton have continued to mine small quantities of coal from their area, which they are able to dispose of to the country people of Sutherland's river and that section of the county.

CAPE BRETON.

While the trade of Cumberland and Pietou counties was in excess of the previous years, that of this county was far behind and not more than 65 per cent. of that of 1873. The falling off appears most noticeable in the trade with the United States, where the demand for Provincial coal was unusually light. Then the fall in the price of coal in England enabled vessels bound for the St. Lawrence to carry coal out as ballast, and so undersell Nova Scotian coal that had to pay freight. In Nova Scotia proper the railways enable some business to be carried on during the winter months, but in this island there is little local demand, and the practice of banking has alone to be resorted to to give the men employment at that season.

During the year the railway of the Cape Breton company was extended from the Reserve and Emery collieries to Louisburg and once again, after more than a century had passed, has that port become a scene of industry. It is expected that the railway and shipping pier will be completed in the spring, when the company

hope to control the western trade by obtaining lower freights than can be secured to the eastward of Scatarie. Louisburg being an open port it is expected that coal will be shipped from thence all the year round, and that steamers bound across the Atlantic will make it a port of call for fuel.

It is also proposed, it is said, to erect both iron and copper smelting furnaces. At present the copper ore from Tilt Cove Newfoundland, is shipped direct to Swansea, but the owners of the mines are of opinion that it would be cheaper to ship it to Cape Breton, for smelting, and then send the resulting regulus to Swansea. It is to be hoped that this idea will prove feasible and be carried out. As for Iron smelting, all that is required is a general revival of that industry, for Cape Breton is in itself abundantly supplied with all the necessary raw products that should make the manufacture of iron a profitable business.

COLLIERIES.

SYDNEY.

This and Lingan are the only mines now worked by the General Mining Association of London. The operations as Sydney have not been on the usual scale or equal to the facilities, of so extensive an establishment, the production being very much less than that of former years. Various circumstances have contributed to this result, but the principal cause has been the reduction of the working space in the pit consequent on the accumulation of water in the deeper portions of the mine. The water made in the dip workings had been for some years allowed to collect in the lower places with the expectation that on the new shaft at Lloyd's Cove being completed it could there be much more easily removed than by raising it at the Queen pit. The difficulties, however, experienced in sinking through the heavy feeders of water that were met with prolonged the completion much beyond the time anticipated, and a larger body of water, in consequence accumulated than was at first intended. A number of working places had therefore to be abandoned, and the men removed to a new section of the pit, where the seam was for a time found to be troubled, and where from its irregular thickness much delay was occasioned in the winning out of new places. The production was in consequence materially affected. Considerable improvement

was, however, made in the output during the season, and the productive powers of the mine almost restored. The water in the lower workings is for the present kept from further encroachment by two steam pumps placed in the mine and supplied with steam from the surface.

In the course of the year the effective shutting off of the feeders in the new shaft was accomplished and the sinking rapidly progressed in dry ground. In one month 66 feet were sunk ; and in November last the coal was reached at a depth of 681 feet. The seam is of the usual thickness, 6 feet, and of a quality that will maintain the reputation of the widely known "Sydney Coal." The usual requirements of a pumping shaft, a sump and standage for water, are now being provided and the lower set of pumps is now being placed in the shaft. Meanwhile the shaft bolings have been made and a drift is being driven to the rise, by which it is intended to tap the water in the Queen Pit workings and bring it to the pumps. This connection, it is expected, will shortly be made and its completion will render unnecessary the further use of the steam pumps. It will also enable the bords to the deep to be re-opened and a greater working space provided.

Preparations are at the same time being made for raising coal at the new pit during the ensuing season and an increased output may therefore be expected. The branch railway to connect with the new winning is nearly completed and the rails will be laid early in the season. A new wharf, which will be 500 feet long, is being built at the Bar, and while giving additional means for shipping, will give what is much needed greater depth of water for the large class of vessels which are now often engaged in the coal trade. The house accomodation has been further increased by the addition of 32 tenements which are of an improved style and well adapted to the requirements of the occupants.

The ventilation of the workings has been improved by the increase of the furnace power. A second furnace 6 feet wide with 135 yards of heating column has been added. To reduce the consumption of fuel and to protect the firemen, the boilers have been shedded over.

LINGAN.

The output from this colliery is again much below the usual production : but is almost entirely due to the depressed state of the trade. The position of the mine as regards working

space, which was much contracted by the accident in 1873, is rapidly improving; new working places having been won out to the North and to the deep. Little, however, was done after the commencement of the shipping season and operations were discontinued early in the fall.

As it was apprehended that the fire which occurred at the time of the accident might not be thoroughly extinguished, it was considered advisable to allow the workings to fill with water. A recent examination showed the fire to be extinguished and the water is now being pumped out with the view to the resumption of work this coming season in the places formerly in operation.

On the surface, foundations are prepared for a new winding engine of a more modern description than the one now in use; and 16 tenements have been added to the house accomodation.

THE CAPE BRETON COMPANY.

In pursuance of the Mines Regulation Chapter the agents of the Reserve, Emery and Schooner Pond Collieries reported that these properties have been transferred to the above named company, but no legal transfer has yet been made and the leases still remain in the names of the respective companies that held them last year.

RESERVE.

No coal has been mined at this colliery since the summer the stock on hand then being sufficient for the demand. In the mine the main slope has been extended to a length of 2040 feet, and the west slope 1320 feet. The rooms are driven 16½ feet wide, leaving the pillars of an equal width. The dip of the seam is one in twelve. At the outcrop a parting in the top of the seam was three feet in thickness which at the bottom of the slope is reduced to 3 inches. It also thins to the West and is entirely wanting at the Caledonia pit, while it thickens to the east and is some 10 feet thick at Old Bridgeport. The ventilation of the mine is regulated by a furnace 5 feet 6 inches wide, and 3 feet above the bars. The wooden cupola on the surface is contracted to an area of 16 square feet.

EMERY.

The working of this colliery was also early suspended and has not since been resumed. Machinery similar to that at the Re-

serve has been erected. The winding engine has one 24-inch cylinder with a 4 foot stroke. It is geared one to two and has friction drums. Five boilers 33 feet long, and 3 feet in diameter, supply the steam to this engine, the fitting up shop, and to the pump which is a direct-acting steam pump placed at the bottom of a pit chiefly sunk for the column of delivery pipes.

SCHOONER POND.

No coal was mined at this colliery during the year and the workings were allowed to fill with water as at the Emery and Reserve

GARDINER.

Headways have been driven to the rise 18 chains, and a pit 55 feet deep sunk for ventilating purposes. The pit has been opened out with rooms 18 feet wide, leaving pillars 10 yards thick by 40 yards long, with a view to the subsequent working of the pillars. The seam varies in thickness from 3 feet 6 inches to 4 feet 9 inches. It has a strong post roof and a fireclay floor.

The coal from this colliery is shipped from the International pier at Sydney.

INTERNATIONAL.

A new lift has been opened by a dip incline 1320 feet long, the pillars being left 8 yards thick by 20 or 40 yards in length. As is now generally done the pumping is effected by a direct acting steam pump. A new one has been added, which has a 16-inch cylinder and 7-inch plunger, and for which the steam is conducted from the surface.

GLACE BAY.

Mining was principally carried on in the Harbour seam, the Roost Pit on the Hub seam having been early closed. The sinking of the new or Stirling pit has been completed and the Harbour seam struck at the depth of 234 feet. The sinking was delayed by the quantity of water met with, which at times was as much as 8000 gallons per hour. Great advantage was found attending the use of dynamite in the sinking as no time was lost in drying the holes or in making water-tight cartridges. The shots were fired by electricity. The winding engine has a pair of horizontal 11-inch cylinders with a stroke of 3 feet 6 inches, driving direct a 6 foot draw.

The entrance to the harbour has been improved by the widening of the channel to a width of 100 feet.

CALEDONIA.

A few pillars have been removed, a second incline plane fitted up, and upper levels driven from the inclines. On the surface more tenements and mechanic's houses have been erected, the screens covered in and additional boiler power furnished.

The artificial harbour at Port Caledonia has been benefited by being entirely shut off from the waters of Glace Bay Lake, and the flow of the tide prevented.

VICTORIA.

A new lift has been opened by a further sinking of 135 feet which gives to the slope a total length of 750 feet. The coal in this section is absolutely dry, showing how tight the measures naturally are. Some troubles similar to those met with in the Block House suggest similar circumstances, on account of their singularity, and offer a hope that the seam is not faulted but is here merely steeply pitched as the measures are on the northern side of the Blockhouse trough.

The pumping is now effected by direct acting steam pumps, a smaller Cameron throwing the water from the bottom to the second lift, and a larger one stationed there sending it to the surface.

ONTARIO.

A lower lift of workings some 180 feet in depth which was opened a few years ago, but temporarily abandoned has been pumped out and work in it resumed. The shipments from this colliery are made at Port Caledonia.

At the eastern end of the area in which this colliery is, the Schooner Pond colliery extracted some 1500 tons from the Emery, the next underlying seam, from a jib shaped portion that separated the two areas of the last named company.

BLOCK HOUSE.

The workings of late have been chiefly in the pillars though some excavations have been made in the solid coal of the deeper part of the trough. To repair the damage done to the wharf by gales of wind and the drift ice of late winters, but principally by the great gale of August 1873, a new face has been made by the building of a block 24 feet wide on the eastern side, and the addition of 40 feet to the front. The work is of a very

substantial character. The face is built of timbers one foot square backed and bolted to round logs not less than a foot in diameter at the small end.

GOWRIE.

The removal of the pillars has received some attention. A face of work is carried up in the pillar from the highest cross cut to the broken and the remainder of the pillar brought in working back. A new method of working has been adopted in one section of the pit. Rooms 30 feet wide are driven between pillars 18 feet thick. A road is carried up on each side and the centre is stowed with the shale and refuse coal.

Clip pulleys have been adopted in the self-acting inclines by which now all the coal from the rise workings is lowered to the main levels.

The mine water is so corrosive that it has been found economical to replace the cast iron pipes by pump trees of birch, the working barrels being lined with babbit metal. Some progress has been made towards establishing the new winning to the Northwest of the present pits. A railway three-quarters of a mile long has been built and machinery erected. The winding engine has two horizontal 20-inch cylinders with a 3 foot 6 inch stroke. The drums and pulleys are 8 feet in diameter and are for round ropes. There are 4 flash flue boilers, 30 feet long by 3 feet in diameter. The completion of this new winning will probably be made during the current year.

SOUTH HEAD.

It is expected that work will be resumed at this colliery in the Spring and a wharf built for the shipment of the coal.

At Lech Lomond, about six miles from Big Pond, at the head of East Bay, coal has been found. The seam is said to dip at an angle of 20 degrees and to have 18 inches and 2 feet of coal separated by a parting of $3\frac{1}{2}$ feet thick.

Messrs. Ingraham have been taking a few tons of coal from the outcrop of the Indian Cove seam on their area adjoining the Sydney mines.

VICTORIA COUNTY.

In this, the only other county in which coal mining has been prosecuted, the chief operations have been at the New Campbellton, where the pit has been put in order, the slope extended to a depth of 580 feet and new rooms broke off. The tubs and wagons repaired, a new hoisting engine ordered and a locomotive purchased to run the wagons to the wharf at Kelly's Cove.

The continuation of the seam has been further traced toward Cape Dolphin. A new overlaying seam 2 feet thick has been discovered.

The Black Rock colliery on Boularderie has been re-opened and a few tons of coal extracted and sold.

The results of the prospecting in Richmond and other Counties have not been reported.

GOLD MINING.

“What is the cause of the decline in the Gold Mining of Nova Scotia” is a question often asked, for it is only too apparent that year by year the yield of gold is lessening and the number of men engaged in mining reduced. Seven years ago 27,583 ounces were extracted from 30,673 tons of quartz by the labour of 676 men, and last year but 9140 ounces were obtained from 13844 tons of quartz mined by 246 men. An answer is not far to seek but a remedy is not so readily available. Among the causes that have been assigned for the decline are over speculation, share dealing in place of quartz mining, incompetent and expensive management, and lastly dishonesty. These all doubtless did exist and had their influence, and yet the decline continues even now when most of the causes that are presumed to have largely produced it have passed away. Search must consequently be made deeper, and it is feared some allowances must be made for the natural obstacles to be surmounted in the mines themselves, such as the excessive thinness of the paying leads, the disproportionate expense of pumping and an absence of rich finds and large profits to excite further prospecting and continued labour in spite of non-success.

Capital has been already induced to speculate in our mines but on the whole it failed to do so profitably. To turn it again into the same channel will be difficult. It can only be done, now that companies have nearly ceased to interest themselves in our gold mines, by showing that individuals and companies of tributers can do more than merely make wages by working the outcrops of the leads, and to show that experience has been gained, economy learnt, and improved methods of mining and milling introduced since the first attempt was made to bring capital into the business.

Money has been made at gold mining in Nova Scotia and among the mines that have been most successful are the Wellington and Palmerston at Sherbrooke, the Ophir at Renfrew, the Albion at Montegu, the Eldorado at Wine Harbour and the German's mine at Waverley.

Without doubt there are many leads just as rich as any that have been found yet to be discovered, and although wages and the price of materials have risen experience in mining now enables leads to be worked and pay expenses, that before could not be made to do so. So that while the prospects of a return to the activity of 1867 are not immediate, still there is no likelihood of an entire cessation of this industry. It is believed that one step in the march of improvement has been taken by the introduction of dynamite as an explosive in the place of black powder. It has been tried at many of the mines, and where fairly tested found to be attended with economy. Mr. Townsend, at Tangier, furnishes the following report on the comparative cost of using the two materials. His results from using dynamite have enabled him to mine with profit a lead that hitherto can hardly be said to have paid expenses. "The Ward shaft on the Dunbrack lead was let to tributers who sank it from a depth of 44 to that of 69 feet, stripping 950 superficial feet of the lead at the rate of 1.58 feet per man per day, at a cost of 87.5 cents a foot for labour, powder and fuse. The same shaft was then continued, using dynamite in place of powder, and 562 feet were stripped at the rate of 3.75 feet per man per day and at a cost of 43 cents a foot. A subsequent stripping of 522 feet from a depth of 77 feet, cost 46 cents a foot and was effected at the rate of 3.5 feet per man per day. From shaft No. 1 on the same lead and from a depth of 40 feet, 746 feet were stripped at the rate of 3 feet a day and at a cost of 52 cents per foot. In making this estimate the cost of much preliminary work was included. Shaft No. 2 was let to tributers who were using black powder at 62.5 cents a foot, but as they found the ground excessively hard, they quickly abandoned the contract. Work was then proceeded with using dynamite and 500 feet stripped from a depth of 40 feet at the rate of 4.5 feet per man per day at a cost of 49 cents. A subsequent stripping of 685 feet, cost 59 cents a foot." This reduction in cost which in the mine alluded to, attended the substitution of dynamite for black powder, if general should enable many mines now merely paying expenses to yield a profit. At Sherbrooke and Waverly a considerable saving is also effected, but no definite statement has been forwarded.

Were single hand drilling and the system of paying by the foot drilled, introduced a further saving might be expected. In the

matter of milling much remains to be done. Some attention has been given to the batteries, but with but one or two exceptions little to the treatment of the tailings which undoubtedly do carry off much gold with the flowered mercury and iron pyrites. The actual loss is not known, for the practice of assaying is not resorted to, but that in many cases it is considerable, cannot be doubted.

The subletting of mines to tributers is still largely practised and while it has advantages when properly conducted, it has evils which become more apparent as it continues. In previous reports reference were made to the character of the work done by tributers, how that often the outcrops of the leads are stripped and made reservoirs for water, and the excavations often but partly packed with debris and but temporarily secured. In these respects the system is undoubtedly bad, but what legal measures to suggest that will remedy the evil without interfering with and crushing out adventurers from prospecting, are not easy to determine. The men who take the mines on tribute are irresponsible, and Arab like, they are forever wandering, trying new places, opening up old mines and again abandoning them.

Perhaps a remedy may be found by modifying the system of leasing, and by making the title of holders more secure, make them more interested in adopting a proper and more permanent mode of working.

DISTRICTS.

STORMONT.

In the spring work was resumed on areas 983 and 196 Block 1, E. D. On the property of the Consolidated Company, Mr. Hattie erected a winding engine and force pump. He also built a shaft house and put the mill in order. On the lead he has tunnelled to the west from the bottom of the shaft, which is 120 feet deep, and stoped overhead, obtaining fair returns for his labour.

Some little prospecting has been done on other areas in the district.

At the Johnston's brook mine a tunnel was started to intersect the lead 85 feet from the surface at a distance of 150 feet, but on driving a dyke was cut and the work was abandoned.

WINE HARBOUR.

The Eldorado Company have suspended operations on the

Plough lead, for on sinking below the 130 feet level, for 20 feet it was found that the lead had pinched to less than two inches in thickness and carried no gold. As the lead also pinched to the West and was barren it was naturally supposed it would not be likely to improve again in depth. It seems as though the paying portion of the lead had filled in a wedge-shaped fissure which was formed by the abutting of the main fracture against a cross-fault of the same age. The thickest and richest part being near the surface, at the junction of the lead with the cross fault.

At the Barrasois, the thick lead was abandoned and work was transferred to a lead 25 feet to the south, on areas 1 and 2, Block Six.

Some work was also performed on the Major Norton lead and prospecting on others, 18, A ; 12, 13 and 24, B ; 15 and 27 D ; 9 and 10 F ; 6, G.; and 1 H.

Twenty-two tons of tailings, worked over at the water mill yielded 5 ounces of gold.

SHERBROOKE.

Mining was very dull in this district until the autumn when work revived and the end of the year saw a return of some of the old interest in its mines.

On the Dewar lead the western claims 620, 621, 622, 623, Block 3, were continuously worked, while to the east the lead seems to have impoverished in depth and work was abandoned in the Try Again, and for a time on the Rochester property. New and more powerful machinery has been erected on the Wellington, the adjoining and underlying lead, and the work of pumping out the water begun. It will be remembered that the workings on the Wellington were carried down to a depth of 500 feet. The greatest depth yet attained in any gold mine in the Province.

New ground has been broken on several areas in the district and some abandoned leads re-opened, but the results nowhere proved very promising and in most cases after a short time the miners turned their attention to new localities.

The tributers who have been working on the Palmerston property have also worked the extension of the South lead on the Dominion. On the same line of leads on areas 748 and 749, Block 3, the returns have been fair and promise steady work for

this year. On the extension of the same belt on areas 750 and 751 on what is probably the Stryker lead mining has also been carried on. Other operations were conducted by Mr. Zwickle on areas 674, &c., and on area 615, Block 5. Mr. West has discontinued to mine on the lead lately worked by him on the Hayden and Derby property.

When work in the mines was dull during the summer, the miners turned over the dump piles and put much of the refuse with some of the surface soil through the mills obtaining sufficient gold to pay for the labour.

HARRIGAN COVE.

Further prospecting in this district has disclosed more leads to the south of the Galena belt. Regular mining has not yet been begun. At Shear's Point some 12 tons taken from the 20-inch lead yielded 5 ounces of gold; a return that it is expected would pay well were a mill conveniently situated for crushing the quartz.

FIFTEEN MILE STREAM.

This district in spite of its disadvantageous position has attracted several parties of prospectors who have laid bare many promising leads. For want of a good crusher little has yet been done in the way of actually testing the value of the quartz extracted, but it is hoped that the winter will enable material to be taken into the district and that in the spring one or both mills will be in working order. A good road over which supplies can be carried is much needed, for the lumberer's roads at present used are practically impassable during wet weather.

The only actual mining has been on the Jackson lead, which is one of the few large leads that yield well. Nearly two feet thick it carries 16 dwt. to the ton. Like the barrel quartz at Waverley, this lead has many rolls, but the rolls instead of dipping slightly or not at all as is generally the case in other places, dip at an angle of 25°. In some other leads of the district the rolls are nearly vertical.

CARIBOU.

Operations were resumed in this district, Mr. Caffery taking on tribute the Hyde property and Mr. Touquoy returning to work his own areas. Mr. Caffery has sunk the pumping shaft on the Burnett or Hyde lead, an additional 30 feet, making it have a

total depth of 124 feet. He has stoped 100 feet east, and 220 feet to the west, to within 10 feet of the bottom. Some distance east of the pumping shaft this lead is thrown 60 feet south, and was opened by four shafts 10, 5, 15 and 35 feet respectively in depth. It varies from $1\frac{1}{2}$ to 8 inches in width, having an average of 4 inches.

A shaft 12 feet in depth has been sunk on the Slate lead. On the so called Reid block, Messrs. Touquoy and Caffery trenched about 50 feet in soil varying from 5 to 10 feet in depth and sank three shafts 15, 15, and 25 feet respectively. From the deepest, stopes were driven 8 feet and 10 feet to the east and west. The lode is the same as north No. 1 on Mr. Touquoy's property, but has diminished from 7 to 3 inches in thickness. On the same lead Mr. Touquoy sank three shafts to the depth of 10, 25 and 10 feet respectively and stoped from the middle one 15 feet east and west. On north lode No. 2 which is 8 to 18 inches thick, he sank 18 feet, increasing its depth to 84 feet and stoped 10 and 20 feet to the east and west.

On the Pioneer property about 100 feet of trenches were cut searching for leads. Explorations were also made on the old Cross lead which in spots carried 20 ounces to the ton and on the Flat lead which at one time paid well.

TANGIER.

The chief operations have been on Strawberry Hill, mining on the Leary, South and other adjoining leads having been abandoned. The new lead opened by Mr. Forrest last year on the Strawberry Hill he abandoned to work on the Dunbrack which lies about 200 feet to the south. The same lead is worked by Mr. Townsend and is the same that is spoken of when reference is made to the use of dynamite in the gold mines. Across the river Messrs. Ross and Miller have been working on the supposed extension of the Leary lead. A tunnel has been driven in from the shore which carries off the surface water. The shaft is down 30 feet and the stopes extend 40 feet along the lead which is 2 to 8 inches thick. The prospecting on the parallel leads, one of which is supposed to be the Fields has been suspended. No quartz from these leads has yet been crushed to test their value, and do so it is talked of putting up a mill on the river.

At Mooseland Mr. Irvine has continued to employ some eight men on the property he has under tribute.

OLDHAM.

The Hail lead on the Sterling property was steadily worked. This lead is very small but rich. It differs from ordinary leads in that it does not follow the lines of stratification. But it has a general dip north against the dip of the strata when passing through quartzite, until it strikes a bed of slate which it follows down for a short distance and then again breaks away across the strata. Where this vein is worked to the eastward it does not show at all on the surface. Some little work has been done on the Whitehead, Britannia and Blue leads, and prospecting generally throughout the district. Mr. Donaldson struck a fault at the bottom of his mine at a depth of 120 feet which a cross drift proved to have thrown the lead 18 feet to the north. He is now preparing to continue the sinking and to work the pumps by means of a set off from the main pump-rods. In the upper portions of the mine the stopes extend 500 feet along the lead.

RENFREW.

A small amount of work was done in the Preeper lead and some prospecting on new ground by Mr. McClure but without much success.

WAVERLEY.

On Laidlaw's Hill the tributers have continued to work the barrel quartz. They have two pits about 30 feet deep connected by a tunnel. From the lower one the water is pumped by means of a wire rope driven by a water wheel in the ravine close by. The quartz lies very flat and the workings have been both to the rise and dip of the shaft. A second company of tributers began in September to mine on the adjoining Morton property.

Work on the American Hill was suspended in the spring and Mr. McClure set his men to search for the continuation of the Union lead, which does not show at the surface to the eastward. It was found and has since been paying handsomely. The lead numerous rolls 4 to 8 feet apart dipping at a slight angle to the east. Its usual thickness is 8 inches but in the rolls it thickens to 15 inches.

MONTAGU.

The Albion mine owned by Mr. Lawson and which he has been working for the last five years was closed during the summer, but has been since let to tributers who propose to further stope along

the intersection of the cross lead with the belt lead. The mine has yielded about 10,000 ounces of gold and is said to have been worked most profitably. During late years a plan of the workings that records the value of each parcel of quartz extracted, was kept. It is of interest, for while it shows how irregularly the gold is distributed in the lead, it also points out the extent and character of the so-called "gold streak." The richest portion of the lead at the surface was at the main shaft; in depth it trended to the westward. In the sinking of the main shaft, which reached a total depth of 300 feet, the quartz in the eastern stopes diminished in richness and thickness and ceased to pay the nearer to the shaft the further the sinking progressed. The western stopes also became impoverished in depth and the yield of paying quartz so small in quantity that it became no longer profitable to keep the mine free.

An idea may be formed of the expense of extracting a ton of quartz when it is stated that where the vein thinned it required about 160 square feet of stoping to yield one ton of quartz. Each square foot on the lead being mined on an average at a cost of 52 cents. In such a vein as this a yield of two or even three ounces to the ton is consequently unprofitable.

The mine was worked in a most systematic manner, and in such a way that the scaffolds above the lower stopes were below the next stopes in the series, thus enabling the miners to throw the slate and waste rock down and stow it the more easily on the scaffolds to the saving of much labour. The several shafts that are shown on the sketch plan were formed by leaving spaces unpacked with slate immediately above the centre of each stope.

The mill erected by Mr. Lawson is the best appointed in the Province. Blankets are used and the pyrites collected and specially treated in a revolving barrel. The tailings have been worked over a second time and the pyrites from exposure and a subsequent remilling reduced to $1\frac{1}{2}$ ounces in value.

Symond's property has been let to tributers and they have been working the cross lead on area 1461. One lot of 18 cwt. yielded 19.7 ounces of gold. Tributers have also been working on Messrs. De-Wolfe's property, area 1166, mining merely on the surface. Other tributers have done a little work on areas 952 and 1457.

UNIACKE.

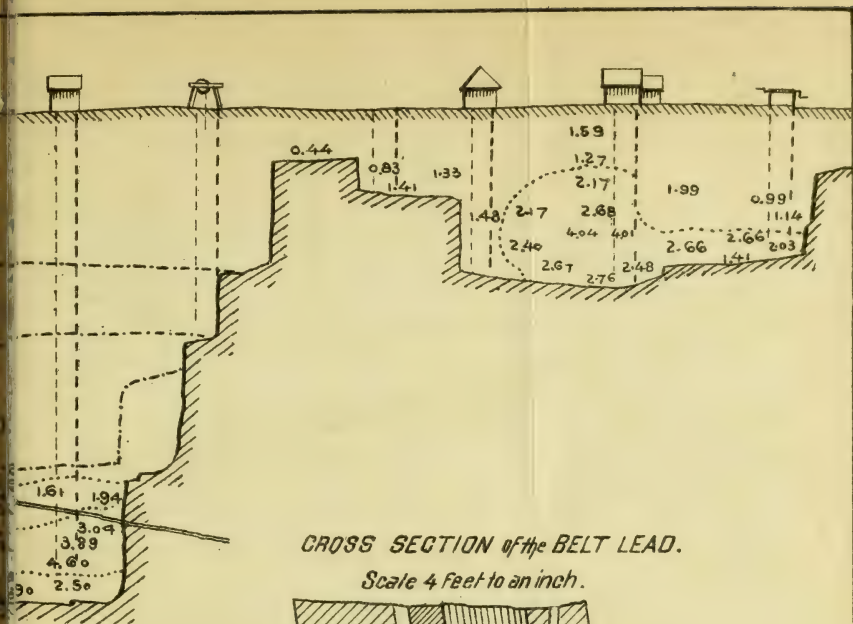
A few men worked in the summer on the McIntosh claims, stripping portions of the leads that had been left from former working down to the water level, a distance of 25 to 30 feet.

GAY'S RIVER.

Mr. McDonald has continued to work area 40. in the conglomerate of the lower carboniferous which immediately overlies the auriferous slates. The streak of pay dirt seems to dip N. N. W. The main slope strikes the lower edge of it at a depth of 140 feet, when the brow of a steeper declivity is reached and the underlying and paying conglomerate thins out. The slope then turns to the N. W. and has been driven 160 feet further between, as it were, nips in the pay dirt, the non-auriferous conglomerate which is 6 to 8 feet thick, coming directly down on to the bed rock. In the adjoining area to the east the edge of the steeper declivity is met with at a depth of 90 feet and from that point the pay streak has been followed to the south, a distance of 40 feet.

Lately the miners have been stripping off the top of the bed rock and crushing the slate with the conglomerate as it has been found that the fine gold works its way into the cracks. From one crevice 2.5 ounces were extracted though this is unusual as generally the gold is equally disseminated.

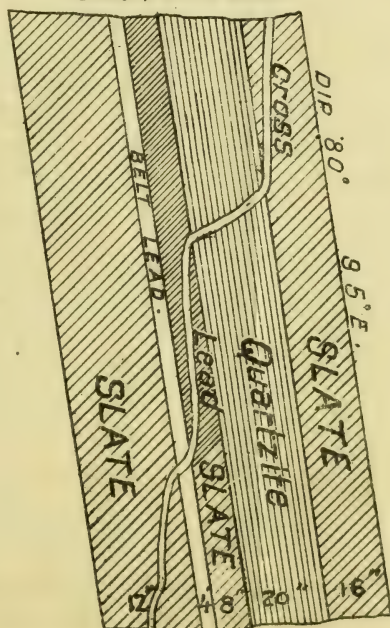
In Yarmouth County, the mine at the Cream Pot, Cranberry Head, has been re-opened, the shafts and buildings put in repair, and the mill in order. The west shaft has been sunk a further distance of 5 feet or to a total depth of 190 feet. The east shaft has also been deepened some 30 feet and has now a total depth of 145 feet. The lead has only been stoped out some 50 feet from the surface between the shafts which are 50 feet apart. There are other two shafts on the lead which were on a former occasion sunk to depths of 40 and 90 feet respectively. The lead does not follow the lines of stratification, but intersects the soft micaceous slates at a slight angle. It occurs in rolls and varies from 2 to 16 inches in thickness. A roll of richer quartz is said to crop out on the shore at low water mark, which it is expected the shaft will strike at a depth of 240 feet.



CROSS SECTION of the BELT LEAD.

Scale 4 feet to an inch.

48, 1149, 1150, 1151, 1152.





IRON MINING.

It has been deemed expedient for the general prosperity of the country that the Government should offer inducements for the development of the coal trade by granting subsidies and percentages on coal royalties to the builders of railways opening up certain sections of the country.

While acknowledging the value to the Province given by the encouragement of railways built to facilitate the export of coal, it should not be forgotten that but a small portion of the true value of this raw product is thus rendered to the country that produces it. Coal is the great motive power of this age and a country possessing it has advantages for manufacturing and arts requiring a large consumption of fuel that should enable it to successfully compete with others not so well favoured. Now the manufacture of iron is essentially one of these industries and any special inducements that can be made to further its development in Nova Scotia should be favourably regarded and especially by coal operators, inasmuch as on an average in England the manufacture of one ton of iron causes the consumption of six tons of coal, of which quantity one-half is consumed in the production of the pig metal from the ore. Nor is the value of such an industry to the country alone to be computed from its consumption of coal. The money expended in the mining of the coal and iron ore is many times turned over by the producers and carriers of supplies, then there are profits derivable from the subsequent handling of the pig metal in the founderies and factories for the working of it up into objects of utility and ornament, every process entailing a further consumption of fuel.

If Government were to aid this industry, either by the direct granting of subsidies per ton of iron smelted, or by the granting of a drawback on the royalty of the coal consumed at iron works, the resources of the Province would be directly developed in a greater degree than they would by the encouragement of facilities for transportation.

The establishment of such an industry in Cape Breton would especially benefit the general business of that Island and would

make a market for some of the small coal now all but valueless. Most of the Cape Breton coals are coking coals and from among so many some may be found to yield strong and suitable coke. And as experience has taught, and as the relative consumption of iron ore and coal would suggest, it is better to take the ore to the fuel than the fuel to the ore, we must hope some day to see iron works established on the Bras d'Or, or at Sydney, or at Louisburg, some centre where ores from different localities may be brought and mixed at the furnaces. Although at the present time the iron trade of this seaboard is dull, and the immediate prospects of the mines and furnaces in the United States is anything but encouraging, still it is a business that must shortly revive and eventually pay in this country, which possesses the requisite natural advantages, cheap transit, abundance of coal, iron ore and limestone.

During the year that has passed an unusual degree of activity prevailed among prospectors searching for beds of iron ore and discoveries have been made in several sections of the country that promise to be of future value.

Professor How in his "Mineralogy of Nova Scotia", classifies the information gained in 1868, respecting the position and extent of the Iron deposits of the country. Since then new discoveries and further explorations have been made, and the extent of many deposits shown to be considerable.

In Cape Breton at the Indian Reserve, Whycocomagh, some nine deposits have been exposed as interbedded with the country slates, and proved to extend a few hundreds of yards. They extend much further, but the surface being heavily covered with soil and trees has made the work of exploring tedious and expensive. One bed of magnetic ore, nine feet thick yields, it is reported, 46 per cent. of metallic iron, another hematite bed six feet thick, carries 56 per cent. of iron. At Big Pond on the East Bay of the Bras d'Or lake, a bed of hematite some nine feet thick has been lately opened and proved to extend for at least half a mile. An analysis shows it to contain 61 per cent. of iron. Very promising looking boulders of hematite ore have been found at Little Lorraine near Louisburg but no explorations have, it is understood, yet been made. Clay ironstone is known to exist in the coal measures of the Sydney field near the town of Sydney and at Schooner Pond in considerable quantity. The largest beds of this ore that have yet

been noticed are found near Mabou and by analysis contain 42 per cent. of iron. An iron ore containing much manganese, is reported to exist near Loch Lomond, Cape Breton.

In Nova Scotia proper boulders of ore have been found in several localities where explorations have been conducted on a small scale. Along the course of the North mountain, Digby Neck, and at Middleton, a magnetic ore of very superior quality has been found in many places, but nowhere has it yet been reported to exist in quantities.

At Arisaig close to the pier a bed of hematite three feet thick has been exposed. Its composition is unknown.

In the Goshen Hills, of Hants County, a deposit of iron ore, identical in appearance to that of Londonderry, has been opened by Mr. Browne, and proved in one place to be forty feet wide. An adit has been begun that will intercept the lode at 85 feet from the surface. The composition of a sample of this ore is given in the table of analyses. On the East and West extensions of the Londonderry beds at North River and towards Five Islands veins of specular and magnetic ores are reported to exist.

On the farm of S. Johnstone, Newton Mills, Stewiack, iron ore is said to have been found. In other localities in Colchester County the existence of iron ores has been for a long time known, as that limonite, near Brookfield, and goethite at Old Barns.

The Springville iron ores in Pictou County have been further prospected by Mr. Edwin Gilpin, for the holders of the licenses, and much additional information obtained. He also made a preliminary survey for a railway to connect these so called East River areas with the Provincial railroad below Hopewell, and found that a line of eleven miles would open up the field of which area No. 5 may be considered the centre.

On area, No. 5, a license to work, the vein of limonite has been traced along the east bank of the East river, two and a half miles across the area, and is supposed to extend up the river through area No. 13 for seven miles. Where trial pits have been sunk and the vein reached, its thickness has been found to vary from 8 to 15 feet. A vein of hematite in the Silurian slates, apparently parallel to the limonite bed, has been proved at the southern extremity of the area to be 15 inches thick, increasing in thickness going north. On area No. 12, a bed of red hematite 7 feet wide, was traced about one mile from the centre of the

northwest side line obliquely across the area to the property of J. Kennedy. Overlying it, is a band 12 feet wide and underlying it another 8 feet wide.—Area No. 6. The vein of specular ore already proved on the eastern side of this area was further examined by trial pits, and the width of the main vein found to vary from 6 to 20 feet while the side veins in places thickened to 2 feet. The continuation of the Weaver bed seems to extend all the way across area 22, giving to the deposit of specular ore a total length of some two miles.

On the area No. 102, a five foot vein of hematite was traced for a mile and a half along the bank of a brook that empties into the East river at the upper settlement. The continuation of this vein is also supposed to be found on area No. 21. Its general course is north and south. On area No. 7, a new bed of hematite 4 feet wide has been discovered. It has the same course N. 10 E. as the Blanchard vein which has been further proved. On area No. 8, when exploring for the Webster ore a vein of good ore 10 inches thick was struck ten feet down, which did not show at the surface. The Webster vein extend nearly three miles. At Sutherland's River the spathic ore has been further explored and indications of its existence extends for over half a mile. The results of these explorations puts beyond doubt the great extent of the Springville deposits, and the value of some of the ores is shown in the appended table of analyses. Much money has already been expended in developing the district, and strong hopes are now entertained that a company with sufficient working capital will shortly be incorporated to establish extensive iron works in the neighborhood.

The Annapolis Iron Mines at Clementsport, have passed into the hands of the New York and Nova Scotia Iron and Coal Mining and Manufacturing Company, who have employed some eight men only during the year mining ore. The furnace is out of blast undergoing repair. It is contemplated establishing a foundry and forge in connection with these works.

The Acadia Iron mines at Londonderry have also changed hands, and become the property of the Steel Company of Canada, (Limited), having a capital of £500,000 sterling. According to the prospectus, the property consists of 55 square miles of freehold lands together with the mines there under and the works and

buildings thereon. It was purchased for £82,000 in cash and £120,000 worth of fully paid up founder's shares. During the year but 1069 tons were mined, the chief operations being on new ground, cutting, exploring trenches, and driving adits.

A new level is being driven at Martin's Brook which will cut the main deposit 70 feet below No. 6 level of the present workings. It will be about 1700 feet long before striking the ore and it may possible cut a new deposit which is suspected to exist from the occurrence of boulders of ore in the soil some distance from the present workings. A second series of deposits was proved to exist 500 yards to the north at the foot of the Sugar Loaf hill. Some exploring was also done from the ravines on Pine and Cumberland brooks.

On the Folly mountains numerous trenches were cut across the strike of the ore deposits, and the thickness proved in places to be 30 and 40, and even 120 feet. Adits here also have been started in the ravines to tap the surface water of the lode.

The blast furnace, burning charcoal, was kept running during the year and smelted 1462 tons of metal from 3097 tons of ore. The steel works were closed and the foundry was alone utilized. Some 281 tons of ore were shipped to England as a sample. On an average during the last six months 218 were employed.

The ore from these deposits is considered more than usually free from sulphur and phosphorus and especially suitable for steel making. For this purpose, the company which now possesses the property was formed, and while they propose to work the main bulk of the ore by Siemens' Direct Process, for the production of iron and steel, they also intend to erect two large blast furnaces to use coke and produce foundry pig. Three of Siemens' furnaces are already built and they will probably be lighted in April. As their construction and principle of operation is so different from the familiar blast furnace, a short general description will doubtless be of interest.

Each furnace may be said to consist of three distinct parts, the gas producer, the regenerator, and the furnace proper. The gas producer is a rectangular fire-brick chamber, 6 feet by 12 feet, by 10 feet high, with one end inclined at an angle of about 45° to a grate, on which the fuel falls in a thick bed from a hopper on the top of the incline. Air is admitted at the grate, and on burning its oxygen unites with the carbon of the fuel and forms carbonic

acid gas, which rises slowly through the ignited mass, taking up an additional equivalent of carbon and thus forming carbonic oxide. The heat thus produced distils off carburetted hydrogen and other gases, and vapours from the fuel as it descends gradually toward the grate and these with the carbonic oxide, the inert nitrogen of the air, and any unreduced carbonic acid are finally led off by the gas flue to the regenerator. The ashes and clinkers from the grate are removed at intervals of one or two days. A pipe to the ash pit supplies a little water which is decomposed as it evaporates and comes in contact with the incandescent fuel, thus forming hydrogen and carbonic oxide which serve to enrich the gas. A sliding damper enables any one of the gas producers—of which there are six—to be at any time shut off from the main gas flue.

To prevent a combustion of the gas in the flues by the admission of fresh air through the crevices in the brick work a slight outward pressure is maintained. This is effected by carrying up the hot gas through a short brick stack to a horizontal sheet-iron tube, "the elevated cooling tube," from which it passes down directly to the underground brick flue leading to the regenerators, forming a syphon having both limbs equal, but one filled with a heavier gaseous fluid than the other. For the gas rising from the producer at a temperature of 1000° Fahr., is cooled as it passes along the tube and consequently the descending column is denser and heavier and overbalances the ascending column.

The regenerators are worked with two pairs to each furnace. Each regenerator is a chamber packed with fire brick, separated so as to allow of the free passage of air or gas between them. The gas ascends through one chamber whilst air ascends through the neighboring chamber and both are conducted by passages to the furnace, where mingling, they burn, producing the heat due to their chemical action. Then passing through the furnace, they, (the combined gases), by similar passages into the remaining pair of regenerators from above downwards they heat them intensely, especially the upper part and then travel on in their cooled state to the chimney. Every twenty minutes the course of the air and gas currents is reversed by means of valves. The chambers heated by the waste gases, heat on the reversal of the current the entering gas and air and are thus alternately heated and cooled. The heat evolved by the combining gases is considered to be about

4000° and the waste heat after passing through the regenerator has had its temperature lowered to 300° Fahr. By the alternate reversing of the current course the temperature is accelerated until the furnace acquires the required heat. Were no cold materials put in to abstract the heat, the temperature would continue to increase as long as the furnace holds together and the supply of air and gas is continued.

Two of the furnaces are rotators specially modelled by Mr. Siemens. They are 9 feet in diameter and 8 feet long and are revolved by machinery. The third is a melting furnace.

The advantages of this process for puddling are that the heat can be raised to an almost unlimited degree, that the flame can be made at will, oxidising, neutral, or reducing, without interfering with the temperature, that the in-draughts of air and cutting flames are avoided and that the gas fuel is free from ashes, dust and other impurities.

LEAD.

A search for ores of lead is occasionally made and indications of extensive deposits have been in several localities discovered. At Lower Gay's River, six miles from Shubenacadie railway station, the prospecting, renewed last autumn, has been continued and an idea may now be formed of the extent of that deposit. Discovered some fifty years ago by the settlers who then as now quarried and burnt the limestone for their own use, it has been several times examined and excavations made with the hope of finding a vein or massed deposit of ore. But from the knowledge now acquired, there is little likelihood of such hopes being realized. The deposit appears to be peculiar, in that it is neither in veins nor pockets but the galena is alone found in small segregated crystals generally diffused throughout the limestone beds. The galena is in spots aggregated about small cavities, but no where in quantity or otherwise than in small grains. These beds are of small thickness, of a total thickness undetermined, but over twenty feet. They lie horizontal on the irregular surface of the unconformable Silurian rocks and judging by the fossils found in the extension of the beds further west, are lower carboniferous and contemporaneous deposits, with the auriferous conglomerate worked for gold five miles to the eastward.

It would appear that subsequent to the final metamorphism of the fossiliferous into the present compact limestone the galena was deposited and probably from the percolating waters that produced the metamorphism. Wherever opened the limestone seems equally charged with galena, the upper equally with the lower beds and in places hundreds of feet apart. Should it be proposed to work this deposit, no hesitation on the score of quantity of ore, such as it is, need be entertained. The proved area that can be worked by simple quarrying is ample to warrant the erection of extensive works if only a process can be found to make the small percentage pay. Hand specimens may be found to yield 17 per cent. but the rock requires picking to give an average of three per cent. Analyses of the ore give $11\frac{1}{2}$ ounces of silver to the ton of pig lead.

The grains of galena are so fine and intimately blended with the limestone that trituration will be necessary for separation. This can only be done at considerable expense and at a proportionately large loss of ore. It is not likely that any further steps will be taken until some practical test has been made at some existing lead works.

Disseminated crystals of galena are found in the limestone near Sydney and Arichat, at the latter place in small pockets, but no where in any appreciable quantities. Boulders of lead ore have been found near Pembroke in Colchester County, but not in situ. A narrow vein containing galena has been found near Port Hood, C. B., which requires further exploration before its value can be estimated.

FREESTONE.

New Freestone quarries were opened at Wallace and Pictou, but the total quantity exported was less than that shipped last year. From Wallace Mr. Battye sent 1850 tons of building stone to the United States and 2763 tons of second class to Prince Edward Island. Fifty five men were employed at his quarry and works. He has improved his shipping facilities by building a new wharf and purchasing the steam tug Lion to tow vessels in and out of port. He has opened a new quarry and put up a new hoisting engine. Of the other quarries no information has been obtained. The total shipments from

	TONS.	VALUE.
Wallace	6863	\$17.113
Pugwash.....	308	2.050
Pictou.....	188	1.448
Merigomish.....	150	1.500
Tatamagouche.....	25	100
Windsor.....	130	10.000
	<hr/>	<hr/>
	\$7664	\$23211

Most of the grindstones made in the Province are quarried by A. Seamen & Co., at the Lower Cove near the Joggins. A few at Pugwash and Tatamagouche.

Tatamagouche, 13 pieces.....	\$ 126
750 tons Lower Cove Stone at \$16.....	12000
350 tons Shore Cove Stone at \$12	4200
Scythe Stones 194 gross	776

LIMESTONE.

Pugwash is the only place reported to have shipped limestone to the amount of 448 tons. Many small quarries exist throughout the county, which supply limestone to the kilns. Lately kilns have been built to burn the marble of George's river and the Marble Mountain of Cape Breton, and an excellent quality of lime is produced.

BARYTES.

There is quite a demand in the United States for barytes of good quality to be used as an adulterant. At many localities this mineral is found, as at Port Hood, Stewiacke, Antigonish and River John at which latter place a bed of 4 feet wide is reported to crop out in several places. It is only mined however at Five Islands, from whence 208 tons were exported.

PLASTER.

New quarries of this material have been opened on the Bras d'Or, Cape Breton, and preparations are now being made to ship

largely during the coming season. The shipments in 1874 were from

Windsor.....	63,370	
Hantsport.....	500	
Chevirie.....	23,095	
Walton	1,640	
Maitland.....	6,775	
Halifax.....	330	
Parrsborough.....	1,320	
Antigonish.....	6,50	
Baddeck (Bras D'Or).....	6,560	
		<hr/>
	104,240	\$104,240

SALT.

In several places in the Province, and generally, if not invariably, in the lower carboniferous measures, salt springs are known. Attempts to manufacture salt from the brine of the springs near Antigonish and Spring Hill have been made, but hitherto neither very extensively nor profitably. A second attempt is now contemplated at Spring Hill, where the circumstances have been of late improved, by the opening of the neighbouring coal mines and the completion of the railway, giving cheap fuel and transit.

The strength of the brine from this spring usually records 30° to 35° on the salometer, or equal to a yield of one bushel of salt from 72 to 82 gallons of brine, the variation in the density being caused by the infiltration of surface water which increases in quantity during wet weather, and decreases during dry. At Syracuse, New York, the brine at the surface only registered 15° to 25° , but on going down a depth of 400 feet its strength rose to over 65° . At Goderich and Seaforth, Ontario, rock salt was struck at a depth of 1050 feet.

It is estimated that with the cheap fuel to be got at Spring Hill a ton of salt should be made for \$1.50; now as the price at Halifax is about \$7.00, there should be left after paying freight and interest a handsome profit.

The Nova Scotia Salt Works Company made a small quantity of salt at their works situated on the outskirts of the village of Antigonish. They have all the necessary plant to do a large business, but the wells are at present out of order. In 1873 a new bore hole was sunk to a depth of 600 feet when it caved in and was abandoned. The first well was then bored deeper

and a plentiful supply of brine was struck, which indicated 35° by the salometer. After pumping for some time from this well boiling was commenced but it was soon discontinued on account of surface water mixing with the brine. It is to be hoped that the hole will be properly tubed and the surface water kept back, for the business of salt making might be made a profitable one, since something like 50,000 tons are annually required in the Maritime Provinces.

PETROLEUM.

Small quantities of petroleum have been reported to show in several localities. The gypsum of Hants County in the neighborhood of Cheverie contains portions strongly impregnated with it.

At Lake Ainslie, Cape Breton, the quantity showing on the surface of the water is so considerable as to have induced explorations. No search is actually going on now, but the owners of the property have not lost faith in the ultimate success of their undertaking. Two bore holes were put down. The first gave indications of oil, but was lost at the depth of 650 feet by the breaking of the rods, which could not be recovered. The second hole was put down to a depth of over 900 feet and gave better promise of oil, yielding it is said nearly 100 gallons, on the bore hole standing for several days. Further work was prevented by the want of funds. Altogether some \$20,000 were expended.

TABLE OF FATAL ACCIDENTS—1874.

No.	Date.	Name.	Age.	Mine.	Cause.
1	March 17 . .	Hector Cummins	13	Vale	Runaway rake in Slope
2	May 28 . . .	Martin Foley	18	Intercolonial	“ “
3	August 17 . .	{ John Potts W. C. Jackson	38 36	Albion “	Rope breaking in shaft. “ “
4	“ 20 .	Joseph Thomas	43	Londonderry (Iron) .	Explosion of powder
5	“ 28 .	Michael Cameron	30	Victoria	Fall of coal
6	“ 29 .	William Stewart	23	Nova Scotia	Fall of coal
7	December 5 .	Charles Lockhart	36	Scotia	Fall of coal

ACCIDENTS.

While the late condition of the coal trade is not a matter of congratulation, it is a source of some satisfaction when treating of that subject, to have fewer fatal accidents than usual to report. Not only was the number less than usual, but the proportion to the business effected was also reduced.

	1872.	1873.	1874.
Produce in Tons - - - - -	880,950	1,051,467	872,720
Persons employed - - - - -	3,522	4,362	4,282
Fatal Accidents - - - - -	13	13	6
Lives lost - - - - -	13	73	7
<i>Averages :</i>			
Persons empl'd per accident	271	315	712
“ “ “ life lost	271	59	611
Tons raised per accident - -	67,765	80,882	145,453
“ “ “ life lost - -	67,765	14,403	124,674

In Great Britain on the average in 1873 there was at all the mines under the Coal Mines Act, one fatal accident among every 526 persons employed in and about the mines, and one death by accident amongst every 479 persons ; also 146,867 tons of mineral were got for each fatal accident, and 133,677 tons for each death by accident.” Thus it appears that the death rate in Nova Scotia was nearly as low as that in Great Britain, and shows what is hoped is the beginning of a decided improvement in the discipline of our mines.

Few as the accidents were they have left five widows and twenty one orphans, with but one or two exceptions wholly unprovided for and to the care of charitable friends and relatives. As yet no actual steps have been taken to form an accident fund but the subject is not entirely forgotten. In Pictou County the colliers regard it favourably and some have expressed a hope that when times are again brisk, the project will be revived.

CAUSES OF ACCIDENTS AND LIVES LOST.

Falls of coal, 3 ; Explosion of powder, 1 ; Falls in shaft, 2 ; Crushed in slopes, 2—Total, 8.

FALLS OF COAL.—This most fruitful source of accident occasioned three deaths, and as is often the case such was brought about by the recklessness or temporary carelessness of the persons who suffered or their immediate associates.

Accident No. 5 —In the bord in which M. Cameron worked, two shots were put in, on the day of the accident, and fired, but the coal did not come away freely so that that shaken had to be pulled down with the pick. When Cameron had taken off all that he thought was loose he stood with his back against the face. Then it was that a block of coal some 7 feet long by 2 feet deep became detached, and, in falling, struck Cameron on the head and back. His injury was at first supposed to be slight, but he being a delicate man was so affected that he died within the week.

On the following day three men were removing pillars in the Nova Scotia pit and were working where, by the wasting away of the fireclay parting, a block of coal was left unsupported. To bring it down it was thought safer to put in a shot than to use wedges. A hole for this purpose was bored, and in the meantime some of the loose coal beneath it was removed. The workmen did not consider it safe to do so, but decided to risk it. While so occupied the block came away toppling over one man and falling on the back of Stewart, instantly killed him.

No. 7. Charles Lockhart began on the morning of December 5th, to continue a holing that had been left unfinished the evening before. The holing was 20 inches deep and 9 feet in length. He had barely resumed work in the middle of the bord when a part of the fall came away and crushed him.

In reporting this accident it was mentioned that no warning was given, and that a peculiar slip in the coal occasioned the fall. It is continually the case, that a peculiar slip, an unusual lype or an unexpected fracture are reported to occasion falls that produce such accidents. It is true they may be rarely seen in individual pits but yet they are continually occurring in mines, and are noticed year after year as a source of accident. Such accidents can be guarded against by the use of spraggs in the holing, and their use should be insisted on by overmen. Five other serious though not fatal accidents were reported as due to falls of coal and stone.

ACCIDENTS IN SLOPES—Two fatal accidents are reported to have occurred to lads in slopes. No. 1 occurred at the Vale Colliery, and was either the result of bad workmanship or from the use of inferior iron in a bolt that connected the shackle on the hoisting rope to the draw-bar of the tub. For on the 17th of March, when a trip had started up the slope and was about 36 feet from the bottom, the bolt broke, the tubs descended and the lad Cummin's who happened to be standing on the track at the time, was killed. It is reported that he was several times cautioned against standing on the track when the tubs were being lifted.

No. 2. occurred during the night shift at the Drummond Colliery. It appears that either the three leading tubs of a rake that was sent away from the bank head of slope No. 4, became accidentally detached, which, by the way, on examination did not seem possible, or that they were sent away uncoupled. At any rate they ran down the slope with great velocity, and leaving the rails at the upper landing, struck Foley who was sitting at the low side corner. He was evidently asleep at the time, for his companions who were within a few yards of him, called to him to look out, fearing that something was wrong on account of the unusual noise, but he took no notice of their cries.

ACCIDENTS IN SHAFTS.—A most distressing accident occurred at the Albion Mines. On the afternoon of August 15th, W. C Jackson, the pumping-engine tender at the Foord Pit, found a joint of the column of pipes required attention, and with John Potts, the changeman, prepared to go down the shaft. Together they stepped into an iron bucket suspended at the shaft mouth by a three inch iron wire rope, which at the instant their weight came on it, parted, and precipitated them down the shaft.

The rope used was considered unnecessarily strong for the purpose. It had been on but 16 months, and as it had seen little service and had neither a broken wire nor a drawn strand, it was considered good for another year's use. Everytime it was required it passed through the hands of men who wound it away on the drum of the engine. It had been used but four days previous to the accident for a similar purpose, and when coiled away, no kink, no sign of wear nor corrosion was noticed. It was only used about once a week, by the men attending the pumps and changing

the buckets, and had not been subjected to a weight greater than that of the iron bucket and the two men. It was rove on the day of the accident in perfect confidence of its strength, and yet it parted with a weight but one-thirtieth of its breaking strain. An examination of the break showed but one wire with a bright fracture. All the rest of the 36 wires in the rope were either rusted through or showed a short and blackened face of fracture, so that the bucket previous to the entrance of the men must have been suspended by one wire and the hempen core.

The body of Jackson fell 600 feet into a tank of water at the top of the first lift of pumps, two-thirds of the way down the shaft. Potts was caught together with the bucket by the first set of buntons, 30 feet down, and lay there for some minutes, while men hastened for a rope to go to his assistance. But they returned too late, for the poor man in his struggles slipped off and carried the bucket with him. His body was heard to bound from side to side of the shaft as it fell to a depth of 450 feet, where it lodged, completely denuded of clothing.

At the inquest the facts stated above were brought out and the conclusion arrived at by the jury respecting the cause of the accident appears most credible. On the rope at or near the point of rupture untarred marline was wound as a 'token' to the engine tender of the position of the men in the shaft. Underneath this token the corrosion is supposed to have occurred. Every time the rope was used, the token would get wet and being untarred would allow the rope underneath to retain moisture, and cause it to dry slowly when wound away on the engine draw. This alternate wetting and slow drying underneath the marline, would allow the wires to rust away unnoticed. Had the corrosion occurred at any other spot it could hardly have escaped the observation of the men who twice handled it each time it was required. There were three other tokens on the same rope which being higher up, were seldom exposed to the same wetting and drying, as the lower one, or the circumstances may not have been quite similar. The lower one may have become from some cause slightly slack, or the upper ones may have been put on where the rope was better protected by a coating of tar. Be that as it may, the engineer was unable to see any difference in the appearance of the rope where the upper tokens had been. The jury, however, thought there was sufficient evidence to convince them that the token was

the cause of the corrosion, and they therefore recommended that such tokens be in future occasionally renewed.

The rope previously used had been on for four years but as the socket on the end of the rope had required on several occasions to be replaced and the end consequently to be cut off, the tokens at each renewal had to be moved.

A wonderful escape from a fall down a shaft occurred at the Sydney Mines. A master sinker, John Brown, was coming up the shaft in course of sinking at the new winning, and forgetful of the brattice, his light having gone out, he thoughtlessly allowed the edge of the tub in which he was standing to catch against the end, 74 feet from the bottom. He was in consequence thrown out and fell, with nothing to break his fall, the 74 feet. Wonderful to narrate he not only lived but escaped with only a severe shaking and sprained ankles.

One other accident in a shaft was reported where a man at the International put his arm through the cage while in motion and had it broken.

EXPLOSIONS OF GAS.—Six explosions of gas were reported, some of which produced but slight injuries and none fatal.

At the Foord Pit of the Albion Mines a shiftman went into a head where he had no business to go, and opening his clanny lamp fired the gas which he had been told lay there. He was slightly burnt on the hands and face. Subsequently he was taken before the magistrates and fined. At Lingan, on July 2nd, James Matheson, on returning to his work of building a dam, fired with his naked light some gas that he was told to try for with his safety lamp. He was slightly burnt and knowing he had broken the rules left the colliery.

At Sydney mines a heading was being driven in June by three shiftmen. On the 4th inst., the shift that should have remained until 10 P. M., came out at 7 o'clock. The next shift went down early and without waiting to see the deputy walked into the face with their naked lights and fired the gas. The two men were sufficiently punished it was thought by being somewhat severely burnt about the face and hands and were not in consequence taken before the magistrate. It was known that some gas accumulated when the heading remained idle for any length of time and the

deputy was specially prepared to warn the men that they would and some gas to brush out on that occasion.

At the Acadia in July a man in the north level of the new drift hung his lamp high close to a hole he was about to stem. After a short time some gas, which had not been previously noticed to collect there, fired at his lamp and ignited the powder, which burnt one man severely and another slightly. Safety lamps were in consequence used while driving the continuation of the levels.

At the Cage Pit of the Albion Mines, two men were slightly burnt in December from gas that had accumulated in the lodgment. Gas had never been known before to gather there though the place had been for some time boarded up to retain the exhaust steam from the force pump. Arrangements have since been made to ventilate the lodgment and condense the exhaust steam in the suction pipe of the pump.

EXPLOSION OF POWDER.—One fatal accident from this cause was reported—No. 4. It occurred in a level of the Acadia Iron Mines at Londonderry. The deceased Jos. Thomas prepared two shots. The fuse of one he lighted and on its exploding he returned to the face of the level intending to fire the second. Just as he did so it exploded and fatally injured him. It is supposed the fuse of the second caught fire from the explosion of the first. The practice of preparing two shots and only firing one at a time is most reprehensible and should never be allowed. Two slight accidents were reported to have occurred from loose powder falling on the pavement and being ignited by sparks from the lamps. A more serious one was produced by loose powder on the floor of a cabin igniting a cartridge which in turn fired a 5 lbs. tin of powder.

MISCELLANEOUS.—Several accidents were reported as having produced serious though not fatal injuries. Among them one occurred at New Cambellton where two lads while scuffling in the engine house knocked against the driver who fell, and in falling got his arm crushed between the cogs of the engine then in motion. This accident happened before the Mines Regulate Chapter came in force. At Sydney a water blast occurred at the time when a miner was passing a cross cut and he was struck by the mud and water and severely bruised by some stone which simultaneously fell from the roof.

TABLES.—The tables showing the average quantity of coal cut per day, the yield per man, the percentage of sales to produce, &c., are well worthy of examination and comparison with those of last year. The percentage of colliery consumption to the produce as a whole is high. In some cases it gives an idea of the cost of mining, and the comparative cheapness of working new winnings with more modern machinery to the older establishments. A comparison of the total days' labour with the produce is also suggestive of the difference in the expense of working the several seams. These tables also show that collieries producing much below their capacity are worked at a higher rate per ton. The method of striking the averages may not in every case be the same, but the variation can by no means account for the noticeable differences at various collieries.

The extract from the last Custom House report, just issued, shows that the Dominion of Canada imports from the United States, more than double the quantity of coal than is exported to that country and that the value of the imports is nearly three times that of the exports.

I have the honour to be,

Sir,

Your obedient servant,

HENRY S. POOLE.

The Hon. ROBERT ROBERTSON,

Commissioner of Public Works and Mines.

LIST OF COAL LEASES IN THE PROVINCE.

No.	Lessee.	Colliery.	Area Square Miles.		Agent and Manager.
1	McKinnon et al	ANTIGONISH COUNTY.	3	Not working.	
13,14,15	Black, C. H. M	CUMBERLAND COUNTY.	3	"	
21	Blight & Smith .....	.....	1	working.	
12	Cumberland Coal Mining Company.	.....	4	not working.	
	General Mining Association. ....	.....	4	"	
22	Grant, Alpin. ....	.....	1	"	
	Joggins Coal Mining Company. ....	.....	2	"	{ Alex. Barnhill. Robert Redpath.
	Joggins Coal Mining Association . .	Joggins.....	2	working.	
20	Kirby, Lewis R .....	.....	1	not working.	
18,19	Livesey John.....	.....	2	"	
11	Lawrence Company. ....	.....	1	"	
5	Lawson Company .....	.....	1	"	
1,2,3,4	New York and Acadia Company..	Macan.....	4	working.	
16	Seaman Gilbert	Scotia.....	1	"	William Bennett.
6,8,7	Spring Hill Mining Company....	Spring Hill.....	3	"	
17	Spring Hill & Pearsboro C. & R. Co.	.....	3	not working.	William Hall.
9	Victoria Coal Mining Company.....	.....	2	"	J. Anderson.
			35		
1	Acadia Coal Company.....	Pictou County. Fraser.....	1	"	

LIST OF COAL LEASES IN THE PROVINCE. (Continued.)

3	Acadia Coal Company.....	Acadia.....	1	working.	Jesse Hoyt,
19,21,22	" ".....	".....	4	not working.	{ S. Cunard & Co.
	Halifax Company, [Limited.].....	Albion.....	4	working.	{ James Hudson.
11	Halibarton, R. G.....	".....	1	not working.	J. mes Simpson.
13,14	Intercolonial Company.....	".....	2	"	
12	" ".....	Drummond.....	1	working.	
6	Kirby, Lewis R.....	".....	1	not working.	
15	Merigonish Company.....	".....	1	"	
10	Montreal and Pictou Company.....	".....	1	"	{ J. B. Moore.
23	Allan, Sir Hugh, Kt.....	Vale.....	3	working.	{ John Greener.
25	Nova Scotia Company.....	Black Diamond.....	4	"	W. W. White.
20	Price, D. E. et al.....	".....	2	not working.	
24	Richey, M. H.....	".....	1	"	
			27		
		CAPE BRETON COUNTY.			
2	Archibald, Thomas D.....	Gowrie.....	1	working.	{ Blowers Archibald.
3	Archibald, Thomas D.....	".....	1	"	{ Charles Archibald.
25	Cape Breton Co.....	Balmoral.....	1	not working.	W. Macqueen.
5,28	Black House Mining Company.....	Blockhouse.....	2	working.	
29	" " (see area).....	".....	1	not working.	
72	Brookman, Samuel.....	".....	1	"	
76,77	Brookman, S. et al.....	".....	2	"	
15	Caledonia C. & R. Company.....	Caledonia.....	1	working.	David McKeen.
31	" (see area).....	".....	1	not working.	
30	Campbell, Alexander.....	".....	1	"	

70	Cape Breton Company, [Limited].		not working.	
45	Collins, P.....		"	1
65	Gardiner Coal Mining Company..	Gardiner.....	working.	1
	General Mining Association.....	Bridgeport....	not working.	2
	" " "	Sydney.....	working.	5
	" " "	"	not working.	12
27	" " "	(sea area) ..	"	5
	" " "	Lingan.....	working.	10
	" " "	"	not working.	4
	" " "	"	"	5
39	" " "	(sea area.) ..	"	5
38	" " "	(sea area.) ..	working.	3
4 12, 16	Glacé Bay Company.....	Little Glacé Bay....	"	1 ½
44, 45	Halifax Coal and Iron Company..	Ontario	not working	1
75	Henry, W. A.....	"	working	1
22	Ingraham, R. J. & J. L.....	"	"	1
5, 13, 18, 19	Intercolonial C. & R. Company	International	"	4
71	Jennings, Edward.....	"	not working.	1
64, 65	Lorway Coal Company.....	Lorway.....	"	2
68	" " "	"	"	1
69	" " "	Emery.....	working.	1
10, 21	Matheson, J.....	"	not working.	2
74	Moore & Moseley.....	"	"	1 ¼
47	McInnes & LeCras	"	"	1
52, 53	Hugh McLeod	"	"	2
49	Glasgow & C. B. (N.S.) C & R. Co. Reserve.....	"	working.	1

LIST OF COAL LEASES IN THE PROVINCE. (Continued.)

73	Reid, Thomas S.	.....	1	not working.	
40,41,42	Ross, H. E. et al.	..... Pt. Aconi.	3	"	
14,24	Schooner Pond Coal Company	..... Schooner Pond.	2	"	
43	South Head Company	..... South Head	1	"	
54 to 63	Sydney Coal Mining Co. (<i>Sea areas.</i>)	.....	10	"	
67	Weatherbe & Kirby	.....	1	"	
32	Sword, William (<i>sea area.</i>)	.....	3	"	
34,35,36	Victoria Company, (<i>sea area.</i>)	..... Victoria	5	working.	Joseph Salter.
50,51	"	.....	2	not working.	
		.....	114		
		INVERNESS COUNTY.			
5	Evans, John Aylmer Freke.	..... Cape Mabou.	2	"	
4	Cape Breton Coal Mining Company.	..... Port Hood.	1	"	
8	Evans, Thomas	..... Chinney Corney	1	"	
9	" (<i>sea area.</i>)	.....	1	"	
12	McCully, Jona, et al.	.....	1	"	
11	Peppett, William J.	..... Broad Cove.	1	"	
6,7	Ross, H. E. et al, (<i>sea area.</i>)	.....	2	"	
10	Tremain, E. D, (<i>sea area.</i>)	.....	1	"	
		.....	10		
		RICHMOND COUNTY.			
2	Marmaud, A. E.	..... Little River.	1	"	
		VICTORIA COUNTY.			
2	Campbell, Charles J.	..... New Campbellton.	3	working.	Lewis E. Tremain.
3,4	Ross, William	.....	4	"	A. Henderson.
		.....	7		
	Total area under lease.	.....	197	sq. miles.	

COAL TRADE BY COUNTIES.

TABLE A.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		VICTORIA.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter - - - -	11,582	7,363	97,613	19,141	150,433	8,548	883	.....	260,511	35,052
2nd Quarter - - - -	11,459	10,500	119,172	89,829	123,943	88,956	1,450	864	256,024	190,149
3rd Quarter - - - -	12,280	17,291	134,572	171,788	84,892	155,308	2,467	2,298	234,211	346,688
4th Quarter - - - -	16,259	14,442	59,519	77,168	45,000	84,204	1,196	1,424	121,974	177,238
Total - - - -	51,580	49,599	410,876	357,926	404,268	337,016	5,996	4,586	872,720	749,127
1873 - - -	27,592	26,345	383,949	333,984	639,085	520,189	841	588	1,051,467	881,106
1872 - - -	15,750	14,153	422,716	388,417	137,326	380,274	5,158	3,070	880,950	785,914

COAL TRADE BY COUNTIES.

TABLE B.

MARKETS.	CUMBERLAND.		PICTOU.		CAPE BRETON.		VICTORIA.		TOTAL.		GRAND.
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	TOTAL.
Nova Scotia—											
Land Sales.....	2,296	742	29,457	13,147	6,183	9,823	.....	.....	37,936	23,710	61,646
Scaborne.....	901	40	55,354	9,04	80,124	5,384	2,439	36,138,818	14,501	153,319	
Nova Scotia—Total.....	3,197	782	84,811	22,180	86,307	15,207	2,439	36,176,754	38,211	214,965	
Quebec.....	.....	.....	114,119	2,060	45,129	233	619	159,867	2,402	162,269	
New Brunswick.....	34,128	8,325	7,216	2,68	26,300	191	.....	67,644	11,197	78,841	
Newfoundland.....	.....	.....	1,945	8	52,597	144	1,003	12	55,456	240	55,696
P. E. Island.....	.....	.....	11,985	23,18	6,144	160	477	18,606	23,342	41,948	
United States.....	3,167	.....	55,536	5,38	65,578	8,671	.....	124,281	14,054	138,335	
West Indies.....	.....	.....	21,362	.....	26,482	.....	.....	47,844	.....	47,844	
South America.....	.....	.....	4,389	.....	688	.....	.....	5,077	.....	5,077	
Europe.....	.....	.....	977	.....	3,175	.....	.....	4,152	.....	4,152	
Total.....	40,492	9,107	302,341	55,585	312,310	24,703	4,538	48,659,681	89,446	749,127	
".....1873.....	23,944	2,401	281,641	52,343	504,281	15,908	488	100,810,353	70,753	881,106	
".....1872.....	13,272	881	340,142	48,275	360,036	20,237	2,879	191,716,329	69,584	785,914	

COAL—GENERAL STATEMENT.

1874.	Produce.	Sales.	Colliery Consumption.
1st Quarter - - - - - Tons.	260,511	35,052	3 2,431
2nd " - - - - - "	256,024	190,149	29,082
3rd " - - - - - "	234,211	346,688	29,794
4th " - - - - - "	121,974	177,238	28,275
Total.....1874.	872,720	749,127	119,582
Total.....1873.	1,051,467	881,106	108,398
Total.....1872.	880,950	785,914	101 341

N. B.—Stock on hand at the end of the year, 93,000 Tons.

COAL SALES.

Markets.	1st Quarter	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1874.	1873.
Nova Scotia - -						
" Land sales	14,967	8,363	13,836	24,480	61,646	60,963
" Seaborne -	2,807	35,287	74,389	40,836	153,319	154,333
Total - - -	17,774	43,650	88,225	65,316	214,965	215,295
Quebec - - - -	...	61,785	84,138	16,346	162,269	187,059
New Brunswick -	6,761	17,001	30,727	24,352	78,841	68,217
Newfoundland -	693	15,491	24,039	15,473	55,696	55,867
P. E. Island - -	...	11,117	21,067	9,764	41,948	26,840
United States -	5,490	35,480	82,995	14,370	138,335	264,760
West Indies - -	4,334	4,917	13,338	25,255	47,844	54,213
South America -	...	...	595	4,482	5,077	1,885
Europe - - - -	...	708	1,564	1,880	4,152	6,976
Total - - -	35,052	190,149	346,688	177,238	749,127	881,106

Collieries.	Seams.	Produce.	Sales.		Per Centage.	Colliery Consumption.		Per Centage.
			Bearing Royalty.	Free.*		Engines.	Workmen.	
		Tons.	Tons.	Tons.	Total.	Tons.	Tons.	
Cumberland County.	Lawrence.....	27	15	12	27	.....	.....	.....
	North.....	1741	1267	58	1325	387	29	23
	South Joggins.....	16685	16489	945	17434	800	142	5
	Spring Hill.....	33127	27221	8092	30813	1019	485	4
	Black.....	.....	.....	.....	.....	.....	.....	.....
Pictou County.	Acadia.....	110734	82421	18437	100858	4539	1766	5
	Deep.....	41183	.....	.....	.....	.....	.....	.....
Albion Mines.....	Main.....	94343	92483	17948	110431	18017	5465	17
	Acadia.....	66545	.....	.....	.....	.....	.....	.....
Intercolonial.....	Deep.....	1524	40747	7466	57213	1618	8141	14
	McBean.....	490	265	15	280	.....	24	5
Mitchell & Co.....	Acadia.....	56953	42220	8865	51085	4208	1433	9
	McBean.....	33039	35205	2854	38059	1515	904	6
Nova Scotia.	Block-house.....	28897	33519	411	33930	3200	1904	17
	Phelan.....	38338	32171	2422	34593	1328	1065	11
Cape Breton County.	Emery.....	22137	13737	3325	17062	1182	1010	9
	Lorway?.....	20136	14615	1025	15640	2806	1254	20
Glace Bay.....	Harbor.....	34185	.....	.....	.....	.....	.....	.....
	Hub.....	12340	39848	1140	40988	2516	1805	7
Gowrie.....	McAnlay.....	32857	27168	7953	35121	2790	3280	18
	Indian.....	67	57	.....	.....	.....	.....	.....
Ingraham.....	Harbor.....	36385	29546	345	29891	1239	1648	8
	International.....	19697	12400	853	13253	1213	1353	13
Lingan.....	Phelan.....	7070	5650	927	5877	139	234	5
	Reserve.....	28769	19686	5140	24826	1538	1818	11
Schooner Pond.....	Emery.....	1523	740	644	1384	339	248	31
	Lloyds.....	8529	.....	.....	.....	.....	.....	.....
Sydney Mines.....	Main.....	96958	72282	270	72582	23509	7552	19
	Ross.....	15310	10891	951	11842	1631	1621	21
Victoria.....	.....	.....	.....	.....	.....	.....	.....	.....

Black Rock.....	.....	35	85	85	85	.....	10	28
	.....	5961	4453	48	4501	661	186	13
New Campbellton.....	.....	872720	659681	89446	749127	76194	43388	13

* FREE COAL.—Chap. 9, Sec. 106, (a). "Slack Coal, that is, Coal that shall have passed through a screen, the bars of which are not wider apart than three-quarters of an inch."

NOTE.—The large stocks on hand at the first of the year account for the high per centage at some Collieries.

COAL SALES IN NOVA SCOTIA FROM 1785 TO 1874, (Inclusive.)

Year.	Sales.	Total.	Year.	Sales.	Total.		
1785	1,668	14,349	1831	37,170	839,981		
1786	2,000		1832	50,396			
1787	10,681		1833	64,743			
1788			1834	50,813			
1789			1835	56,434			
1790			1836	107,593			
			1837	118,942			
			1838	106,730			
			1839	145,962			
			1840	101,198			
1791	2,670	51,048	1841	148,298	1,533,798		
1792	2,143		1842	129,708			
1793	1,926		1843	105,161			
1794	4,405		1844	108,482			
1795	5,320		1845	150,674			
1796	5,249		1846	147,506			
1797	6,039		1847	201,650			
1798	5,948		1848	187,643			
1799	8,947		1849	174,592			
1800	8,401		1850	180,084			
1801	5,775	70,452	1851	153,499	2,399,820		
1802	7,769		1852	189,076			
1803	6,601		1853	217,426			
1804	5,976		1854	234,312			
1805	10,130		1855	238,215			
1806	4,938		1856	253,492			
1807	5,119		1857	294,198			
1808	6,616		1858	226,725			
1809	8,919		1859	270,293			
1810	8,609		1860	322,593			
1811	8,516	91,527	1861	326,429	4,927,339		
1812	9,570		1862	395,637			
1813	9,744		1863	429,351			
1814	9,866		1864	576,935			
1815	9,336		1865	635,586			
1816	8,619		1866	558,520			
1817	9,284		1867	471,185			
1818	7,920		1868	453,624			
1819	8,692		1869	511,795			
1820	9,980		1870	568,277			
1821	11,388	140,820	1871	596,418	3,012,565		
1822	7,512		1872	785,914			
1823	27,000		1873	881,106			
1824			1874	749,127			
1825							
1826	12,600						
1827	12,149						
1828	20,967						
1829	21,935						
1830	27,269						
				Total....	13,081,708		

SUMMARY.

1785 to 1790	14,349	1831 to 1840	839,981
1791 " 1800	51,048	1841 " 1850	1,533,798
1801 " 1810	70,452	1851 " 1860	2,399,820
1811 " 1820	91,527	1861 " 1870	4,927,339
1821 " 1830	140,820	1871 " 1874	3,012,565

NOTE.—Tables purporting to show the total quantity of coal produced in Nova Scotia have been from time to time published, but in all errors of greater or less magnitude have crept in as the different valuations given to the chaldron in the several sections of the country have been overlooked. The above table is probably as nearly correct as can now be determined and if 13 per cent. be allowed for colliery consumption 1,700,622 tons must be added making the total quantity actually raised 14,782,330 tons.

PORT OF HALIFAX.

Exports of Minerals:—

	Tons.	1874. Value.
Coal	7,615	\$30,963.00
Plaster	330	594.00
	<hr/> 7,945	<hr/> \$31,55 .00

Imports of Coal:—

	1870.	1871.	1872.	1873.	1874.
Anthracite, (United States)	1024	1577	3715	5605	4494
Gas Coal	1934	240	...	...	1131
Cumberland . . . . .	..	..	..	..	503

PORT OF ST. JOHN'S.

Imports of Coal:—

	1873.	1874.
United Kingdom	7,075	7,732
Nova Scotia	40,220	29,863
United States	348	268
Total in Tons	<hr/> 47,643	<hr/> 37,865

COAL EXPORTED FROM N. S. TO NEW YORK.—1874.

Pictou	3,269
Sydney	1,488
Glace Bay	667
Port Caledonia	21,230
Blockhouse' Cow Bay	12,103
Total	<hr/> 38,757

COAL SEABORNE, 1874.

By 408 Steamers	160,838
" 2770 Sailing Vessels	503,841
	<hr/> 664,679

STATEMENT OF THE NUMBER AND CLASSES OF PERSONS EMPLOYED, AND AVERAGE RESULTS
AT EACH COLLIERY DURING THE YEAR ENDED 31st DECEMBER, 1874.

COLLIERY.	UNDERGROUND.				SURFACE.				CONSTRUCTION.		TOTAL.		AVERAGE No. of days per person.		AVERAGE No. of Tons per cutter.	AVERAGE tons per day— per cutter.	HORSES.		PITS Worked. days.
	Cut's.	Lab'rs.	Boys.	Days.	Mach. labor.	Lab'rs.	Boys.	Days.	Pers's.	Days.	Pers's.	Days.	Und'g'nd.	Sur- face.			above.	below.	
Black, Lawrence.	1	1	1	24				156		2	6	156	26		2.2				12
New Dominion.																			
Scotia.	5	2	1	1262				1257		2	284	284	210	158	2.0	12			143
South-Joggins.	29	6	8	10485				5301	13	747	17	16623	244	257	2.3	73	7	6	226
Spring Hill.	43	18	3	18165				13915	10	2496	13	34576	284	284	2.7	128	3	2	258
S. H. & Farrisboro C. & R. Co.								370	1	8	8	378	53						
Acadia,	163	69	21	57685	30	94	8	36263			385	91951	220	274	3.1	485	15	5	228
Pictou.																			
Albion Mines.	258	68	61	80620	61	124	36	58469			698	130035	204	205	2.5	525	21	28	{ D 240 M 236 }
Interdenial.	95	42	11	27100	25	44	21	27096	17	5039	25	59244	183	301	3.9	727	7	3	285
Mitchell & Co.	4		1	375				257			9	632	75	64	1.6	6	1		86
Nova Scotia.	71	23	16	31088	19	46	10	21569			185	52657	282	287	2.8	217	5	5	262
Vale.	108	29	5	30485	30	32	2	10194	80	16955	295	57634	214	159	3.62	165	3		236
Block-house, Cape Breton.	68	10	23	15079	26	70	6	19374	16	5779	219	40252	139	190	2.8	425	9	24	145
Caladonia.	51	7	12	14945	1	31	5	10417	10	2476	127	57868	213	222	3.6	224	8	14	149
Collins.								12				20	4						
Emory.	41	8	4	14257	21	63	5	11645	14	4333	156	30235	268	130	2.0	539	6	3	135
Gardiner.	45	10	4	17275	10	16	2	6714	3	437	90	24446	293	240	1.5	119	4	2	169
Glance Bay.	88	6	25	22197	29	25	3	13467	39	10513	215	46177	186	236	2.8	519	12	17	{ Hr 243 Hb 79 }
Gowrie.	76	10	18	20468	25	32	13	15775	16	3978	190	40221	196	225	4.32	2.2	7	19	171
Ingraham.	2	1	1	105				45	4	53	10	263	26	22	3.3				
International.	46	11	11	17692	10	29	4	15774			123	3336	248	363	3.2	197	14	15	185
Lingan.	48	11	18	15548	10	31	9	11829	19	2536	146	29213	202	410	2.0	129	10	10	163
Ontario.	23	2	2	4316	2	12	2	2896			43	7312	152	125	3.07	43	2	1	307
Reserve.	53	9	12	13205	3	69	13	13618			107	26824	178	146	5.42	3.0	9	6	104
Schooner Pond.								1664			42	1948	54	50					
Sydney Mines.	192	52	78	76904	61	93	28	53165	91	31679	595	161748	232	292	2.3	549	26	60	{ L 243 M 233 }
Victoria.	30	13	4	9381	13	9	5	7940	5	636	81	17931	199	271	2.5	175	2	1	87
Black Rock.	2	1	2	133	3	2	1	35		17	10	185	26	7	0.6				27
New Campbell n.	38	13	4	6866	12	14	8	4563	6	541	95	11970	120	134	1.2	21	5		283
	1581	478	349	503918	453	923	193	363503	355	88301	4282	955722	213	232	2.5	165	179	221	

COLLIERY CONSTRUCTION ACCOUNT.

79

COLLIERY.		Shafts.	Slopes.	Adits.	Machinery.	Colliery Buildings.	Dwellings.	Surface Works.	Railways.	Wharves.	Prospecting.	TOTAL.
Black,	Cumberland Co.	...	...	...	...	...	...	...	...	...	1005 00	\$1005 00
New Dominion	...	...	...	...	...	...	...	...	...	...	250 00	250 00
Scotia	...	...	80 00	...	...	...	...	...	...	...	...	80 00
South Joggins	...	...	...	...	858 00	261 00	240 00	...	...	650 00	...	2009 00
Spring Hill	...	...	8023 47	2045 00	9200 00	1050 00	2500 00	5079 43	548 00	...	...	28445 90
Spring Hill & Parrsboro	C. & R. Co.	...	158 89	...	...	604 00	793 49	1157 93	1024 00	...	1666 60	5007 91
Acadia,	Pictou Co.	...	...	...	5613 89	1477 45	6324 03	1526 60	622 14	49 93	32 20	15646 24
Albion Mines	...	...	...	...	4211 52	6762 28	...	2898 08	606 89	...	...	14478 77
Intercolonial	...	161 88	8309 20	883 79	6191 57	1370 81	2221 44	417 58	...	...	...	13556 27
Mitchell & Co.	...	...	...	...	...	9 00	76 00	...	...	...	...	85 00
Nova Scotia	...	...	1130 00	307 00	1774 00	2737 00	...	188 00	1146 00	281 00	451 00	8014 00
Vale	...	...	1200 00	648 00	5200 00	...	8403 00	1284 00	21691 00	4374 00	...	42800 00
Black House,	Cape Breton Co.	...	...	...	...	...	...	...	...	16795 86	...	16795 86
Caledonia	...	...	...	1447 05	1520 24	...	3188 63	706 70	...	...	...	6862 62
Emery	...	205 06	704 40	321 50	...	182 20	75 00	700 45	...	...	112 25	2360 86
Gardiner	...	1780 00	...	350 00	180 35	95 60	300 00	...	...	...	...	2705 95
Glance Bay	...	16324 54	...	185 63	300 00	2594 92	...	...	2524 63	...	...	21929 72
Gowrie	...	186 00	40 00	140 00	...	2060 00	600 00	510 00	1350 00	6300 00	...	11786 00
Ingraham	...	75 00	...	85 00	35 00	...	...	...	...	...	...	195 00
International	...	...	716 50	21 25	...	952 09	6000 00	...	...	245 08	...	982 83
Lingan	...	...	803 00	2356 37	...	63 00	...	...	450 00	131 00	...	10692 46
Ontario	...	...	...	253 00	109 00	...	22 00	...	...	...	...	447 00
Reserve	...	...	1122 30	...	286 00	...	82 40	323 60	...	...	...	1814 30
Schooner Pond	...	129 40	...	...	...	...	...	...	...	...	...	129 40
Sydney Company	...	...	...	...	...	...	...	...	...	...	16 00	16 00
Sydney Mines	...	14653 81	...	...	41 39	...	1074 91	...	8182 45	4906 76	...	28859 32
Victoria	...	...	345 00	787 00	600 00	...	...	...	...	75 00	...	1807 00
Black Rock,	Victoria Co.	...	...	12 00	20 00	...	...	32 65	...	40 00	...	104 65
New Campbellton	...	...	1193 00	32 00	...	466 00	281 00	141 00	184 00	156 00	209 00	2662 00
		33575 69	23825 76	9874 59	36140 96	20685 35	31784 90	14966 02	38929 11	34004 63	3742 05	247529 06

EXTRACT.*CUSTOM HOUSE REPORTS.*

COAL AND COKE.

Imports, 1873-'74.	Tons.	Value.
Great Britain.....	133,603	\$724,012
United States.....	671,224	3,081,341
	<u>804,827</u>	<u>3,805,353</u>
Exports, 1873-'74.		
Great Britain.....	331	1980
United States.....	316,423	1,054,467
Other Countries.....	101,603	287,292
	<u>418,357</u>	<u>1,343,739</u>

NOTE.—During the year 1874 Nova Scotia sent only 138,335 tons to the United States.

IRON ORE ANALYSES.

	Londonderry.		Ankerite.		Pictou—Spathic	
	White.	Yellow.	Brown.		Sutherland's River.	
Carbonate of Iron....	2.32	23.45	20.30	18.59	88.59	88.48
Carbonate of Lime....	5.40	43.80	49.20	51.61	1.53	2.34
Carbonate of Mang'se .. ..		.80			2.85	1.85
Carbonate of Magnesia	2.29	30.80	30.20	28.67	3.48	5.82
Silica.....	.5	.10		.13	2.70	1.51
Sulphate of Lime.....	...	...	...	...	.55	.....
	99.70	98.95	99.70	99.93	99.70	100.00

ANALYSES OF IRON ORES OF NOVA SCOTIA.

CONSTITUENTS.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XL	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	XXI.	XXII.	XXIII.
Oxides of Iron.....	75.67	65.26	52.39	69.71	92.61	97.52	85.01	81.93	88.52	93.69	84.51	84.73	69.86	83.79	83.29	82.65	81.78	83.13	79.68	96.93	88.21	50.14	69.17
“ “ Manganese.....	.52	trace.	15	.13	2.16	.....	.38	.66	.78	1.10	.76	.23	2.25	2.05	.41	.25	.21	72	2.51	trace.	.....	24.74	undd
Alumina.....	.45	5.59	undd	undd	1.21	.....	.69	1.62	.71	.....	.19	.23	trace.	1.16	trace.	.76	.86	.66	.63	.33	.....	3.68	undd
Lime.....	2.44	1.88	undd	undd	1.27	.....	.49	.32	1.14	.91	.....	.14	11.79	.34	.39	.13	.52	.88	.37	.04	.....	.35	undd
Magnesia.....	.98	1.05	undd	undd	.43	.....	.19	.65	.82	.....	.13	.14	.42	.62	.25	.10	.12	.25	.34	.11	1.22	4.76	undd
Silica.....	19.43	23.68	undd	29.97	3.68	3.90	2.14	5.84	2.14	4.80	2.22	2.67	.07	.52	4.13	4.79	5.57	1.93	3.05	1.26	9.04	4.81	18.94
Iron Pyrites.....	.....	.....	undd	undd	.06	.....	.....	.....	.....	.04	undd	.....	.....	.75	.02	trace.	.....	.....	.....	.....	.....	.20	.....
(Sulphur).....	.23	.....	.31	.09	.16	(.093)	.65	.04	.24	.002	.....	.004	.016	(.04)	(.00)	(.008)	.....	.016	(.004)	.....	trace.	(.08)	(.65)
Phosphoric Acid.....	.92	.....	(.08)	.63	.08	.....	trace.	.93	.31	.....	.....	(.08)	.....	.....	.....	.32	.14	.86	.44	.007	.....	.21	1.82
(Phosphorus).....	(.10)	.....	.....	(.26)	(.04)	.....	.....	(.43)	(.14)	.....	.....	.....	.....	.....	.....	(.13)	(.106)	(.06)	(.37)	(.19)	(.693)	trace.	(.09)
Water.....	.....	.....	1.98	undd	.....	.....	11.13	9.43	4.61	.....	11.41	11.40	7.07	11.25	11.21	19.82	10.68	11.53	12.43	.82	1.53	11	.06
Loss on Ignition.....	.....	2.54	.....	.....	.....	.....	.25	.....	.....	.....	.45	9.29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.05	.....
Metall. Iron.....	100.0	100.00	.....	.....	100.03	101.75	169.48	97.23	195.99	93.97	130.09	93.74	100.61	99.98	109.60	99.72	99.68	99.98	99.66	99.42	169.99	100.00	.....
	54.36	43.4	33.61	42.50	64.11	68.33	59.30	57.71	62.24	65.2	59.17	49.31	48.92	58.68	58.30	57.85	57.25	58.17	55.17	67.85	61.39	35.10	59.09

Pictou County.

- I, II.—Red Hematite, East River.
- III.—“ “ Webster Vein.
- IV.—“ “ Blanchard Vein.
- V. VI.—Spectacular Ore, McDonald's East River.
- VII, IX, X, XI.—Limonite, Fraser Saddlers', East River.
- VIII.—Limonite, Cullen's, East River.

Colchester County.

- XII.—Limonite, Ross' Farm, Londonderry.
- XIII.—“ “ P. Totten's, “
- XIV.—“ “ Polly Mountain, “
- XV, XVI.—“ Martin's Brook, “
- XVII.—“ Cumberland Br., “
- XVIII.—“ “ North Vein, Londonderry.

XIX.—Limonite, Cumberland Brook, South Vein, Londonderry.

- XX.—Spectular, Cook's Brook, Londonderry.
- XXI.—Red Hematite, Big Pond Cape Breton.
- XXII.—Limonite, Goshen Hills, Hauts Co.
- XXIII.—Nickel Ore.

GOLD

STATEMENT shewing the average daily labour employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ended December 31st, 1874.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, &c., crushed.	Yield per ton.	Gold from Alluvial Mines.	Total yield of Gold.	Maximum yield per ton.	Average yield per man for Twelve Months at \$18.00 per oz.
Stormont	6	1	...	1	236	0 14 5	...	167 19 20	1 11 15	\$503 96
Wine Harbour.....	18	2	1	1	1193	0 10 14	...	633 11 6	5 0 0	633 60
Sherbrooke.....	98	3	2	1	5430	0 14 20	...	4037 1 2	4 5 6	741 49
Tangier.....	17	2	...	2	706	0 11 21	...	419 7 5	2 7 1	444 01
Montagu.....	17	2	2	...	496	1 6 10	...	655 0 22	19 12 22	693 53
Waverley.....	40	2	1	1	1682	0 18 11	...	1553 12 15	7 0 0	699 13
Oldham.....	11	2	...	2	527	1 5 6	...	665 8 11	18 11 16	1088 83
Renfrew.....	1	1	...	1	10	0 6 7	...	3 3 7	0 6 8	56 95
Uniacke.....	1	1	1	...	19	0 14 19	...	14 1 0	0 16 0	252 90
Caribou.....	14	2	2	...	333	1 2 3	...	368 10 23	1 9 23	473 90
Gavs River.....	10	1	1	...	2979	0 3 3	...	466 14 14	0 4 10	840 11
Unproclaimed, &c.....	13	2	1	1	233	0 13 9	...	156 2 4	0 17 12	216 14
Total.....	246	21	11	10	13844	0 13 5	...	9140 13 9	19 12 22	664 76

No. 1.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOUR.					SHERBROOKE.					TANGIER.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January.....	.....	.....	.....	.....	.....	41	203	159	2	9	104	169	145	1	6	12	16	4	10	17
February.....	.....	.....	.....	.....	.....	31	131	79	12	.....	93	134	192	11	.....	10	61	28	12	18
March.....	.....	.....	.....	.....	.....	52	116	62	18	.....	93	304	260	12	.....	15	55	19	18	12
April.....	.....	.....	.....	.....	.....	15	30	24	8	.....	61	452	475	13	.....	12	47	22	7	..
May.....	4	.....	.....	.....	.....	14	60	28	5	12	93	557	358	18	18	12	50	37	19	18
June.....	6	.....	.....	.....	.....	25	124	44	9	10	99	457	242	4	6	16	35	57	12	18
July.....	11	28	10	8	.....	12	72	22	15	2	98	456	240	18	15	25	82	66	6	..
August.....	4	.....	.....	.....	.....	9	125	39	19	14	97	497	343	8	.....	20	56	39	13	6
September.....	12	21	21	16	.....	5	80	86	18	.....	97	396	304	17	5	11	62	31	16	..
October.....	10	117	94	8	20	2	64	33	11	9	111	733	439	2	.....	22	88	38	2	..
November.....	10	70	42	1	..	2	20	19	12	10	115	605	460	14	.....	29	102	48	8	12
December.....	12	.....	.....	.....	.....	10	168	40	19	12	115	679	578	1	.....	26	52	24	..	..
Total.....	6	236	167	19	20	18	1193	633	11	6	98	5430	4037	1	2	177	706	419	7	5

No. 2.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	25	26	79	19	..	36	212	87	19	12	19	49	41	3	15	..	..	..	..	..
February	21	25	47	11	..	33	174	82	16	..	10	233	69	3	9	..	..	..	..	..
March	25	29	36	12	..	38	149	56	16	..	6	15	4	14	13	..	..	..	..	..
April	21	41	82	16	..	29	216	106	17	..	6	21	65	15	11	..	..	..	..	..
May	24	31	74	..	..	22	115	103	7	..	8	121	69	10	..	..	..	..	..	..
June	26	23	52	12	..	38	143	183	6	..	16	84	14	4	7	..	..	..	..	..
July	18	21	52	..	..	30	82	123	9	..	7	25	36	7	17	..	..	..	..	..
August	5	24	90	2	..	42	121	238	19	..	3	11	43	..	..	..	..	..	..	..
September	6	57	48	8	19	42	64	72	17	..	10	14	39	7	16	7	10	3	3	7
October	13	145	39	13	22	49	143	133	..	..	29	113	185	9	11	1	..	..	..	..
November	12	55	47	6	5	54	100	195	1	..	20	28	56	10	18	..	..	..	..	..
December	12	25	13	15	..	46	169	163	5	..	15	27	51	..	6	..	..	..	..	..
	17	496	655	0	22	40	1682	1553	12	15	11	527	665	8	11	1	10	3	3	7

No. 3.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained in each Month in each District.

MO	UNIAKKE.					CARIBOU.					GAY'S RIVER.					UNPROCLAIMED, &C.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	359	36	..	..	22	.....	.....	.....	.....
February.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	289	24	16	..	22	38	29	12	..
March.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	200	26	..	..	21	.....	.....	.....	.....
April.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	139	27	8	..	22	40	23	5	..
May.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	9	200	37	10	..	27	39	24	12	..
June.....	.....	.....	.....	.....	.....	12	.....	.....	.....	.....	11	269	40	..	..	24	84	51	6	12
July.....	1	10	6	17	..	20	.....	.....	.....	.....	9	250	50	14	..	7	.....	.....	.....	.....
August.....	1	9	7	4	..	23	54	69	13	12	10	260	49	8	..	7	.....	.....	.....	.....
September.....	.....	.....	.....	.....	.....	26	67	80	17	6	9	240	53	2	..	7	41	27	6	16
October.....	.....	.....	.....	.....	.....	29	50	49	9	12	9	269	43	9	..	.....	.....	.....	.....	.....
November.....	.....	.....	.....	.....	.....	31	59	59	17	7	11	273	50	4	14	.....	.....	.....	.....	.....
December.....	.....	.....	.....	.....	.....	28	103	108	13	10	10	275	34	3	..	.....	.....	.....	.....	.....
	1	19	14	1	..	14	333	303	10	23	10	2979	466	14	14	13	233	156	2	4

FINANCIAL STATEMENT—GOLD.

Mines Department for 12 Months ended December 31st 1874.

RECEIPTS.				EXPENDITURE.			
DISTRICTS.	Rents.	Royalty.	Totals.	Salaries, Surveys, &c.	Return of Royalty.	Royalty Commission.	Totals.
Caribon	120 00	74 73	194 73	.....	.....	.....	.....
Fifteen Mile Stream.....	42 00	14 37	56 37	.....	.....	.....	.....
Gay's River	18 00	162 62	180 62	.....	2 00	7 34	9 34
Montagu	190 00	265 46	455 46	.....	.....	15 47	15 47
Oldham	112 00	362 51	474 51	276 00	8 00	14 91	298 91
Ovens	32 00	.....	32 00	.....	.....	.....	.....
Renfrew	298 00	119 89	417 89	145 50	.....	.....	145 50
Sherbrooke	128 00	1354 26	1482 26	720 00	32 00	66 05	818 05
Stormont	300 00	58 10	418 10	322 00	40 00	.....	362 00
Tangier	68 00	75 35	133 35	12 00	.....	2 39	14 99
Uniacke	24 00	8 60	32 60	3 06	.....	.....	3 06
Wagamatook.....	4 00	.....	4 00	.....	.....	.....	.....
Waybley.....	22 00	503 12	575 12	.....	67 29	10 60	77 89
Wine Harbour	378 00	234 70	612 70	420 30	.....	14 77	444 07
Prospecting Licenses .....	.....	.....	615 73	.....	.....	.....	(return) 2 60
	1786 00	4283 71	5685 41	1908 46	82 00	131 53	2191 28

OTHER THAN GOLD

Department of Mines for the 12 Months ended December 31st, 1874.

COUNTIES.	RECEIPTS.			EXPENDITURE.		
	Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Licenses to Search.	Surveys.
Antigonish..	140 00	.....	.....	140 00	.....	.....
Cape Breton.....	1100 00	425 00	40099 45	41624 45	59 47	100 00
Colchester.....	700 00	50 00	.....	750 00	20 00	.....
Cumberland.....	1020 00	1450 00	3504 43	5974 43	60 00	.....
Digby.....	20 00	.....	.....	20 00	.....	.....
Guysboro'.....	40 00	.....	.....	40 00	.....	.....
Halifax.....	20 00	50 00	.....	70 00	.....	.....
Hants.....	180 00	.....	.....	180 00	.....	.....
Inverness.....	360 00	50 00	.....	410 00	40 00	.....
Lunenburg.....	40 00	.....	.....	40 00	.....	.....
Pictou.....	820 00	650 00	33750 15	35220 15	60 00	.....
Richmond.....	300 00	100 00	.....	400 00	.....	.....
Victoria.....	140 00	50 00	.....	190 00	20 00	.....
	4880 00	2825 00	77354 03	85059 03	259 47	100 00
					47	47

ERRATA.

PAGE.

4. Line 13. *For uncertainty read uncertainty.*
5. " 26. Strike out 'not,' and read 'unwise to overlook.'
13. " 13. Insert to read,—'quickly left.'
16. " 29. *For helps, read help.*
18. " last but one. *For specimen, read specimen.*
27. " 16. *For wheels, read wheel;*
- " " 23. Transpose, and read SOUTH JOGGINS.
29. " 16. Insert, to read 'upper 9 feet of the seam.'
31. " 16. *For boards, read bords.*
33. " 19. *For as, read at.*
- " " 20. *For facilitie, read facility.*
36. " last but two. *For draw, read drum.*
41. " 6. *For likehood read likelihood.*
45. " last but three. *Before do so, insert to.*
46. " 33. Insert 'has,' and read The lead has numerous.
49. " 30. Transpose to read, of the royalty on.
51. " 22. Insert 'of,' and read: as that of limonite.
52. " 19. *For extend, read extends.*
- " " 21. " extends " extend.
- " " 23. " puts " put.
53. " 14. " mountains " mountain.
- " " 26. " possesses " possess.
54. " 32. Alter to read: Then the combined gases passing from the furnace by similar passages into and through the remaining pair.
55. " 3. *For current read currents.'*
62. " 2. " such was " each was.
68. Raise the three last names in the last column, one line.
69. Straighten the lines under CAPE BRETON COUNTY.
80. In one analyses, for silicia, *read silica*; and in the analysis of white ankerite, for 2.32, 5.4, 2.2, read 23.2, 54.0, 22.0; and in the fourth analysis, for 28.67, read 28.60.



UNIVERSITY OF ILLINOIS-URBANA



3 0112 111050594